HOBART®
WELDING PRODUCTS

OM-932 495 369B
September 1999

Processes


MIG (GMAW) Welding
Flux Cored (FCAW) Welding


Stick (SMAW) Welding


TIG (GTAW) Welding

Description

Engine Driven Welding Generator

Champion 16

OWNER'S MANUAL

⚠ WARNING ⚠

The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

INTRODUCTION

How To Use This Manual

This Owner's Manual usually applies to just the underlined specification or part numbers listed on the cover. If none are underlined, they are all covered by this manual.

To ensure safe operation, read the entire manual, including the chapter on safety instructions and warnings.

Throughout this manual, the words **WARNING**, **CAUTION**, and **NOTE** may appear. Pay particular attention to the information provided under these headings. These special annotations are easily recognized as follows:

WARNING gives information regarding possible personal injury. Warnings will be enclosed in a box such as this.

CAUTION refers to possible equipment damage. Cautions will be shown in bold type.

NOTE offers helpful information concerning certain operating procedures. Notes will be shown in italics.

Equipment Identification

The unit's identification number (specification or part number), model, and serial number usually appear on a nameplate attached to the control panel. In some cases, the nameplate may be attached to the rear panel. Equipment which does not have a control panel such as gun and cable assemblies are identified only by the specification or part number printed on the shipping container. Record these numbers for future reference.

Receipt Of Equipment

When you receive the equipment, check it against the invoice to make sure it is complete and inspect the equipment for possible damage due to shipping. If there is any damage, notify the carrier immediately to file a claim. Furnish complete information concerning damage claims or shipping errors to Hobart Brothers Company, Order Department, 600 W Main St., Troy, Ohio 45373. Include all equipment identification numbers as described above along with a full description of the parts in error.

Move the equipment to the installation site before unpacking the unit. A lifting eye extends through the top of the cabinet on most equipment to facilitate handling with a hoist or crane. Use care to avoid damaging the equipment when unpacking the unit.

WARNING: Falling machine due to lifting eye failure may cause death or serious injury.

- Lifting device may fail when overloaded.
- This lifting device is designed to lift the power source ONLY. If the machine is equipped with a trailer or accessories over 100 pounds, DO NOT LIFT by lifting eyes.
- Avoid sudden jerks, drops, or swinging.
- Check lifting device components visually for looseness and signs of metal fatigue.
- Before changing any hardware, check grade and size of bolts, and replace with bolts of equal or higher size and grade.

Additional copies of this manual may be purchased by contacting Hobart Brothers Company at the address given above. Include the Owner's Manual number and equipment identification numbers.

This page intentionally left blank.

ARC WELDING SAFETY INSTRUCTIONS AND WARNINGS

⚠ WARNING — ARC WELDING can be hazardous.

PROTECT YOURSELF AND OTHERS FROM POSSIBLE SERIOUS INJURY OR DEATH. KEEP CHILDREN AWAY. PACEMAKER WEARER KEEP AWAY UNTIL CONSULTING YOUR DOCTOR. DO NOT LOSE THESE INSTRUCTIONS. READ OPERATING/INSTRUCTION MANUAL BEFORE INSTALLING, OPERATING OR SERVICING THIS EQUIPMENT.

Welding products and welding processes can cause serious injury or death, or damage to other equipment or property, if the operator does not strictly observe all safety rules and take precautionary actions.

Safe practices have developed from past experience in the use of welding and cutting. These practices must be learned through study and training before using this equipment. Anyone not having extensive training in welding and cutting practices should not attempt to weld. Certain of the practices apply to equipment connected to power lines; other practices apply to engine driven equipment.

Safe practices are outlined in the American National Standard Z49.1 entitled: SAFETY IN WELDING AND CUTTING. This publication and other guides to what you should learn before operating this equipment are listed at the end of these safety precautions.

HAVE ALL INSTALLATION, OPERATION, MAINTENANCE, AND REPAIR WORK PERFORMED ONLY BY QUALIFIED PEOPLE.

ELECTRIC SHOCK CAN KILL.

Touching live electrical parts can cause fatal shocks or severe burns. The electrode and work circuit is electrically live whenever the output is on. In semiautomatic or automatic wire welding, the wire, wire reel, drive roll housing, and all metal parts touching the welding wire are electrically live. Incorrectly installed or improperly grounded equipment is a hazard.

1. Do not touch live electrical parts.
2. Wear dry, hole-free insulating gloves and body protection.
3. Insulate yourself from work and ground using dry insulating mats or covers.
4. Disconnect input power or stop engine before installing or servicing this equipment. Lock input power disconnect switch open, or remove line fuses so power cannot be turned on accidentally.
5. Properly install and ground this equipment according to it's Owner's Manual and national, state, and local codes.
6. Turn off all equipment when not in use. Disconnect power to equipment if it will be left unattended or out of service.
7. Use fully insulated electrode holders. Never dip holder in water to cool it or lay it down on the ground or the work surface. Do not touch holders connected to two welding machines at the same time or touch other people with the holder or electrode.
8. Do not use worn, damaged, undersized, or poorly spliced cables.
9. Do not wrap cables around your body.
10. Ground the workplace to a goos electrical (earth) ground.
11. Do not touch electrode while in contact with the work (ground) circuit.
12. Use only well-maintained equipment. Repair or replace damaged parts at once.
13. In confined spaces or damp locations, do not use a welder with AC output unless it is equipped with a voltage reducer. Use equipment with DC output.
14. Wear a safety harness to prevent falling if working above floor level.
15. Keep all panels and covers securely in place.

ARC RAYS can burn eyes and skin; NOISE can damage hearing.

Arc rays from the welding process produce intense heat and strong ultraviolet rays that can burn eyes and skin. Noise from some processes can damage hearing.

1. Wear a welding helmet fitted with a proper shade of filter (see ANSI Z49.1 listed in Safety Standards) to protect your face and eyes when welding or watching.
2. Wear approved safety glasses. Side shields recommended.
3. Use protective screens or barriers to protect others from flash and glare; Warn others not to watch the arc.
4. Wear protective clothing made from durable, flame-resistant material (wool and leather) and foot protection.
5. Use approved ear plugs or ear muffs if noise level is too high.

Eye protection filter shade selector for welding or cutting (goggles or helmet), from AWS A6.2-73.

Welding or Cutting Operation	Electrode Size Metal Thickness or Welding Current	Filter Shade No.	Welding or Cutting Operation	Electrode Size Metal Thickness or Welding Currents	Filter Shade No.
Torch Soldering	—	2	Gas metal-arc welding (MIG)		
Torch brazing	—	3 or 4	Non-ferrous base metal	All	11
Oxygen cutting			Ferrous base metal	All	12
Light	Under 1 in., 25 mm	3 or 4	Gastungsten arc welding (TIG)	All	12
Medium	1 to 6 in., 25-150 mm	4 or 5	Atomic hydrogen welding	All	12
Heavy	Over 6 in., 150 mm	5 or 6	Carbon arc welding	All	12
Gas welding			Plasma arc welding	All	12
Light	Under 1/8 in., 3 mm	4 or 5	Carbon arc air gouging		
Medium	1/8 to 1/2 in., 3-12 mm	5 or 6	Light		12
Heavy	Over 1/2 in., 12 mm	6 or 8	Heavy		14
Shielded metal-arc welding	Under 5/32 in., 4 mm	10	Plasma arc cutting		
(stick)	5/32 to ¼ in., 4 to 6.4 mm	12	Light	Under 300 Amp	9
	Over ¼ in., 6.4 mm	14	Medium	300 to 400 Amp	12
			Heavy	Over 400 Amp	14

FUMES AND GASES can be hazardous to your health.

Welding produces fumes and gases. Breathing these fumes and gases can be hazardous to your health.

1. Keep your head out of the fumes. Do not breathe the fumes.
2. If inside, ventilate the area and/or use exhaust at the arc to remove welding fumes and gases.
3. If ventilation is poor, use an approved air-supplied respirator.
4. Read the Material Safety Data Sheets (MSDSs) and the manufacture's instruction for metals, consumables, coatings and cleaners.
5. Work in a confined space only if it is well ventilated, or while wearing an air-supplied respirator. Shielding gases used for welding can displace air causing injury or death. Be sure the breathing air is safe.
6. Do not weld in locations near degreasing, cleaning, or spraying operations. The heat and rays of the arc can react with vapors to form highly toxic and irritating gases.
7. Do not weld on coated metals, such as galvanized, lead, or cadmium plated steel, unless the coating has been removed from the weld area, the area is well ventilated, and if necessary, while wearing an air-supplied respirator. The coatings and any metals containing these elements can give off toxic fumes if welded.

WELDING can cause fire or explosion.

Sparks and spatter fly off from the welding arc. The flying sparks and hot metal, weld spatter, hot workpiece, and hot equipment can cause fires and burns. Accidental contact of electrode or welding wire to metal objects can cause sparks, overheating, or fire.

1. Protect yourself and others from flying sparks and hot metal.
2. Do not weld where flying sparks can strike flammable material.
3. Remove all flammables within 35 ft (10.7 m) of the welding arc. If this is not possible, tightly cover them with approved covers.
4. Be alert that welding sparks and hot materials from welding can easily go through small cracks and openings to adjacent areas.
5. Watch for fire, and keep a fire extinguisher nearby.
6. Be aware that welding on a ceiling, floor, bulkhead, or partition can cause fire on the hidden side.
7. Do not weld on closed containers such as tanks or drums.
8. Connect work cable to the work as close to the welding area as practical to prevent welding current from traveling long, possibly unknown paths and causing electrical shock and fire hazards.
9. Do not use welder to thaw frozen pipes.
10. Remove stick electrode from holder or cut off welding wire at contact tip when not in use.
11. Wear oil-free protective garments such as leather gloves, heavy shirt, cuffless trousers, high shoes, and a cap.

FLYING SPARKS AND HOT METAL can cause injury.

Chipping and grinding cause flying metal. As welds cool, they can throw off slag.

1. Wear approved face shield or safety goggles. Side shields recommended.
2. Wear proper body protection to protect skin.

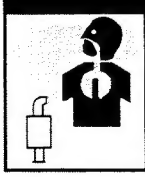
CYLINDERS can explode if damaged.

Shielding gas cylinders contain gas under high pressure. If damaged, a cylinder can explode. Since gas cylinders are normally part of the welding process, be sure to treat them carefully.

1. Protect compressed gas cylinders from excessive heat, mechanical shocks, and arcs.
2. Install and secure cylinders in an upright position by chaining them to a stationary support or equipment cylinder rack to prevent falling or tipping.
3. Keep cylinders away from any welding or other electrical circuits.
4. Never allow a welding electrode to touch any cylinder.
5. Use only correct shielding gas cylinders, regulators, hoses, and fittings designed for the specific application; maintain them and associated parts in good condition.
6. Turn face away from valve outlet when opening cylinder valve.
7. Keep protective cap in place over valve except when cylinder is in use or connected for use.
8. Read and follow instructions on compressed gas cylinders, associated equipment, and CGA Publication P-1 listed in Safety Standards.

⚠ WARNING

ENGINES can be hazardous.



ENGINE EXHAUST GASES can kill.

Engines produce harmful exhaust gases.

1. Use equipment outside in open, well ventilated areas.
2. If used in a closed area, vent engine exhaust outside and away from any building air intakes.

ENGINE FUEL can cause fire or explosion

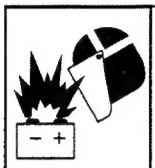
Engine fuel is highly flammable.

1. Stop engine before checking or adding fuel.
2. Do not add fuel while smoking or if unit is near any sparks or open flames.
3. Allow engine to cool before fueling. If possible, check and add fuel to cold engine before beginning job.

MOVING PARTS can cause injury.

Moving parts, such as fans, rotors, and belts can cut fingers and hands and catch loose clothing.

1. Keep all doors, panels, covers, and guards closed and securely in place.
2. Stop engine before installing or connecting unit.
3. Have only qualified people remove guards or covers for maintenance and troubleshooting as necessary.
4. To prevent accidental starting during servicing, disconnect negative (-) battery cable from battery.
5. Keep hands, hair, loose clothing, and tools away from moving parts.
6. Reinstall panels or guards and close doors when servicing is finished and before starting engine.



SPARKS can cause BATTERY GASES TO EXPLODE; BATTERY ACID can burn eyes and skin.

Batteries contain acid and generate explosive gases.

1. Always wear a face shield when working on a battery.
2. Stop engine before disconnecting or connecting battery cables.
3. Do not allow tools to cause sparks when working on a battery.
4. Do not use welder to charge batteries or jump start vehicles.
5. Observe correct polarity (+ and -) on batteries.

STEAM AND PRESSURIZED HOT COOLANT can burn face, eyes, and skin.

The coolant in the radiator can be very hot and under pressure.

1. Do not remove radiator cap when engine is hot. Allow engine to cool.
2. Wear gloves and put a rag over cap area when removing cap.
3. Allow pressure to escape before completely removing cap.

NOTE: Considerations About Welding And The Effects Of Low Frequency Electric And Magnetic Fields

The following is a quotation from the General Conclusions Section of the U.S. Congress, Office of Technology Assessment, Biological Effects of Power Frequency Electric and Magnetic Fields - Background Paper, OTA-BP-63 (Washington, DC: U.S. Government Printing Office, May 1989): "...there is now a very large volume of scientific findings based on experiments at the cellular level and from studies from animals and people which clearly establish that low frequency magnetic fields can interact with, and produce changes in, biological systems. While most of this work is of very high quality, the results are complex. Current scientific understanding does not yet allow us to interpret the evidence in a single coherent framework. Even more frustrating, it does not yet allow us to draw definite conclusions about questions of possible risk or to offer clear science-based advice to minimize or avoid potential risks."

To reduce magnetic fields in the workplace, use the following procedures:

1. Keep cables close together by twisting or taping them.
2. Arrange cables to one side and away from the operator.
3. Do not coil or drape cables around the body.
4. Keep welding power source and cables as far away from body as practical.
5. Connect work clamp to workpiece as close to the weld as possible.

About Pacemakers:

The above procedures are among those also normally recommended for pacemaker wearers. Consult your doctor for complete information.

PRINCIPAL SAFETY STANDARDS

Safety in Welding and Cutting, ANSI Standard Z49.1, from American Welding Society, 550 N.W. LeJuene Rd., Miami, FL 33126.

Safety and Health Standards, OSHA 29 CFR 1910, from Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Recommended Safe Practices for the Preparation for Welding and Cutting of Containers That Have Held Hazardous Substances, American Welding Society Standard AWS F4.1, from American Welding Society, 550 N.W. LeJuene Rd., Miami, FL 33126.

National Electric Code, NFPA Standard 70, from National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

Safe Handling of Compressed Gases in Cylinders, CGA Pamphlet P-1, from Compressed Gas Association, 1235, Jefferson Davis Highway, Suite 501, Arlington, VA 22202.

Code for Safety in Welding and Cutting, CSA Standard W117.2, from Canadian Standards Association, Standards Sales, 178 Rexdale Boulevard, Rexdale, Ontario, Canada M9W 1R3.

Safe Practices for Occupation and Educational Eye and Face Protection, ANSI Standard Z87.1, from American National Standards Institute, 1430 Broadway, New York, NY 10018.

Cutting and Welding Processes, NFPA Standard 51B, from National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

This page intentionally left blank.

PRECAUTIONS DE SECURITE EN SOUDAGE A L'ARC

⚠ MISE EN GARDE ⚠ — LE SOUDAGE A L'ARC EST DANGEREUX

PROTEGEZ-VOUS, AINSI QUE LES AUTRES, CONTRE LES BLESSURES GRAVES POSSIBLES OU LA MORT. NE LAISSEZ PAS LES ENFANTS S'APPROCHER, NI LES PORTEURS DE STIMULATEUR CARDIAQUE (A MOINS QU'ILS N'AIENT CONSULTE UN MEDECIN). CONSERVEZ CES INSTRUCTIONS. LISEZ LE MANUEL D'OPERATION OU LES INSTRUCTIONS AVANT D'INSTALLER, UTILISER OU ENTRETENIR CET EQUIPEMENT.

Les produits et procédés de soudage peuvent sauser des blessures graves ou la mort, de même que des dommages au reste du matériel et à la propriété, si l'utilisateur n'adhère pas strictement à toutes les règles de sécurité et ne prend pas les précautions nécessaires.

En soudage et coupage, des pratiques sécuritaires se sont développées suite à l'expérience passée. Ces pratiques doivent être apprises par étude ou entraînement avant d'utiliser l'equipement. Toute personne n'ayant pas suivi un entraînement intensif en soudage et coupage ne devrait pas tenter de souder. Certaines pratiques concernent les équipements raccordés aux lignes d'alimentation alors que d'autres s'adressent aux groupes électrogènes.

La norme Z49.1 de l'American National Standard, intitulée "SAFETY IN WELDING AND CUTTING" présente les pratiques sécuritaires à suivre. Ce document ainsi que d'autres guides que vous devriez connaître avant d'utiliser cet équipement sont présentés à la fin de ces instructions de sécurité.

SEULES DES PERSONNES QUALIFIEES DOIVENT FAIRE DES TRAVAUX D'INSTALLATION, DE REPARATION, D'ENTRETIEN ET D'ESSAI.

L'ELECTROCUTION PEUT ETRE MORTELLE.

Une décharge électrique peut tuer ou brûler gravement. L'électrode et le circuit de soudage sont sous tension dès la mise en circuit. Le circuit d'alimentation et les circuits internes de l'équipement sont aussi sous tension dès la mise en marche. En soudage automatique ou semi-automatique avec fil, ce dernier, le rouleau ou la bobine de fil, le logement des galets d'entrainement et toutes les pièces métalliques en contact avec le fil de soudage sont sous tension. Un équipement inadéquatement installé ou inadéquatement mis à la terre est dangereux.

1. Ne touchez pas à des pièces sous tension.
2. Portez des gants et des vêtements isolants, secs et non troués.
3. Isolez-vous de la pièce à souder et de la mise à la terre au moyen de tapis isolants ou autres.
4. Déconnectez la prise d'alimentation de l'équipement ou arrêtez le moteur avant de l'installer ou d'en faire l'entretien. Bloquez le commutateur en circuit ouvert ou enlevez les fusibles de l'alimentation afin d'éviter une mise en marche accidentelle.
5. Veuillez à installer cet équipement et à le mettre à la terre selon le manuel d'utilisation et les codes nationaux, provinciaux et locaux applicables.
6. Arrêtez tout équipement après usage. Coupez l'alimentation de l'équipement s'il est hors d'usage ou inutilisé.
7. N'utilisez que des porte-électrodes bien isolés. Ne jamais plonger les porte-électrodes dans l'eau pour les refroidir. Ne jamais les laisser traîner par terre ou sur les pièces à souder. Ne touchez pas aux porte-électrodes raccordés à deux sources de courant en même temps. Ne jamais toucher quelqu'un d'autre avec l'électrode ou le porte-électrode.
8. N'utilisez pas de câbles électriques usés, endommagés, mal épissés ou de section trop petite.
9. N'enroulez pas de câbles électriques autour de votre corps.
10. N'utilisez qu'une bonne prise de masse pour la mise à la terre de la pièce à souder.
11. Ne touchez pas à l'électrode lorsqu'en contact avec le circuit de soudage (terre).
12. N'utilisez que des équipements en bon état. Réparez ou remplacez aussitôt les pièces endommagées.
13. Dans des espaces confinés ou mouillés, n'utilisez pas de source de courant alternatif, à moins qu'il soit muni d'un réducteur de tension. Utilisez plutôt une source de courant continu.
14. Portez un harnais de sécurité si vous travaillez en hauteur.
15. Fermez solidement tous les panneaux et les capots.

LE RAYONNEMENT DE L'ARC PEUT BRÛLER LES YEUX ET LA PEAU; LE BRUIT PEUT ENDOMMAGER L'OUIE.

L'arc de soudage produit une chaleur et des rayons ultraviolets intenses, susceptibles de brûler les yeux et la peau. Le bruit causé par certains procédés peut endommager l'ouïe.

1. Portez une casque de soudeur avec filtre oculaire de nuance appropriée (consultez la norme ANSI Z49 indiquée ci-après) pour vous protéger le visage et les yeux lorsque vous soudez ou que vous observez l'exécution d'une soudure.
2. Portez des lunettes de sécurité approuvées. Des écrans latéraux sont recommandés.
3. Entourez l'aire de soudage de rideaux ou de cloisons pour protéger les autres des coups d'arc ou de l'éblouissement; avertissez les observateurs de ne pas regarder l'arc.
4. Portez des vêtements en matériaux ignifuges et durables (laine et cuir) et des chaussures de sécurité.
5. Portez un casque antibruit ou des bouchons d'oreille approuvés lorsque le niveau de bruit est élevé.

SELECTION DES NUANCES DE FILTRES OCULAIRES POUR LA PROTECTION DES YEUX EN COUPAGE ET SOUDAGE
(selon AWS A 8.2-73)

Opération de Coupage ou soudage	Dimension d'électrode ou Epaisseur de métal ou Intensité de courant	Nuance de de filtre oculaire
Brasage tendre au chalumeau	toutes conditions	2
Brasage fort au chalumeau	toutes conditions	3 ou 4
Oxycoupage		
mince	moins de 1 po. (25 mm)	2 ou 3
moyen	de 1 à 6 po. (25 à 150 mm)	4 ou 5
épais	plus de 6 po. (150 mm)	5 ou 6
Soudage aux gaz		
mince	moins de 1/8 po. (3 mm)	4 ou 5
moyen	de 1/8 à 1/2 po. (3 à 12 mm)	5 ou 6
épais	plus de 1/2 po. (12 mm)	6 ou 8
Soudage à l'arc avec	moins de 5/32 po. (4 mm)	10
electrode enrobées (SMAW)	de 5/32 à 1/4 po. (4 à 6.4 mm)	12
	plus de 1/4 po. (6.4 mm)	14
Soudage à l'arc sous gaz avec fil plein (GMAW)		
métaux non-ferreux	toutes conditions	11
métaux ferreux	toutes conditions	12
Soudage à l'arc sous gaz avec électrode de tungstène (GTAW)	toutes conditions	12
Soudage à l'hydrogène atomique (AHW)	toutes conditions	12
Soudage à l'arc avec électrode de carbone (CAW)	toutes conditions	12
Soudage à l'arc Plasma (PAW)	toutes dimensions	12
Gougeage Air-Arc avec électrode de carbone		
mince		12
épais		14
Coupage à l'arc Plasma (PAC)		
mince	moins de 300 ampères	9
moyen	de 300 à 400 ampères	12
épais	plus de 400 ampères	14

LES VAPEURS ET LES FUMEES SONT DANGEREUSES POUR LA SANTE.

Le soudage dégage des vapeurs et des fumées dangereuses à respirer.

1. Eloignez la tête des fumées pour éviter de les respirer.
2. A l'intérieur, assurez-vous que l'aire de soudage est bien ventilée ou que les fumées et les vapeurs sont aspirées à l'arc.
3. Si la ventilation est inadequate, portez un respirateur à adduction d'air approuvé.
4. Lisez les fiches signalétiques et les consignes du fabricant relatives aux métaux, aux produits consummables, aux revêtements et aux produits nettoyants.
5. Ne travaillez dans un espace confiné que s'il est bien ventilé; sinon, portez un respirateur à adduction d'air. Les gaz protecteurs de soudage peuvent déplacer l'oxygène de l'air et ainsi causer des malaises ou la mort. Assurez-vous que l'air est propre à la respiration.
6. Ne soudez pas à proximité d'opérations de dégraissage, de nettoyage ou de pulvérisation. La chaleur et les rayons de l'arc peuvent réagir avec des vapeurs et former des gaz hautement toxiques et irritants.
7. Ne soudez des tôles galvanisées ou plaquées au plomb ou au cadmium que si les zones à souder ont été grattées à fond, que si l'espace est bien ventilé; si nécessaire portez un respirateur à adduction d'air. Car ces revêtements et tout métal qui contient ces éléments peuvent dégager des fumées toxiques au moment du soudage.

LE SOUDAGE PEUT CAUSER UN INCENDIE OU UNE EXPLOSION

L'arc produit des étincellies et des projections. Les particules volantes, le métal chaud, les projections de soudure et l'équipement surchauffé peuvent causer un incendie et des brûlures. Le contact accidentel de l'électrode ou du fil-électrode avec un objet métallique peut provoquer des étincelles, un échauffement ou un incendie.

1. Protégez-vous, ainsi que les autres, contre les étincelles et du métal chaud.
2. Ne soudez pas dans un endroit où des particules volantes ou des projections peuvent atteindre des matériaux inflammables.
3. Enlevez toutes matières inflammables dans un rayon de 10, 7 mètres autour de l'arc, ou couvrez-les soigneusement avec des bâches approuvées.
4. Méfiez-vous des projections brulantes de soudage susceptibles de pénétrer dans des aires adjacentes par de petites ouvertures ou fissures.
5. Méfiez-vous des incendies et gardez un extincteur à portée de la main.
6. N'oubliez pas qu'une soudure réalisée sur un plafond, un plancher, une cloison ou une paroi peut enflammer l'autre côté.
7. Ne soudez pas un récipient fermé, tel un réservoir ou un baril.
8. Connectez le câble de soudage le plus près possible de la zone de soudage pour empêcher le courant de suivre un long parcours inconnu, et prévenir ainsi les risques d'électrocution et d'incendie.
9. Ne dégelez pas les tuyaux avec un source de courant.
10. Otez l'électrode du porte-électrode ou coupez le fil au tube-contact lorsqu'inutilisé après le soudage.
11. Portez des vêtements protecteurs non huileux, tels des gants en cuir, une chemise épaisse, un pantalon revers, des bottines de sécurité et un casque.

LES ETINCELLES ET LES PROJECTIONS BRULANTES PEUVENT CAUSER DES BLESSURES.

Le piquage et le meulage produisent des particules métalliques volantes. En refroidissant, la soudure peut projeter du éclats de laitier.

1. Portez un écran facial ou des lunettes protectrices approuvées. Des écrans latéraux sont recommandés.
2. Portez des vêtements appropriés pour protéger la peau.

LES BOUTEILLES ENDOMMAGEES PEUVENT EXPLOSER

Les bouteilles contiennent des gaz protecteurs sous haute pression. Des bouteilles endommagées peuvent exploser. Comme les bouteilles font normalement partie du procédé de soudage, traitez-les avec soin.

1. Protégez les bouteilles de gaz comprimé contre les sources de chaleur intense, les chocs et les arcs de soudage.
2. Enchainez verticalement les bouteilles à un support ou à un cadre fixe pour les empêcher de tomber ou d'être renversées.
3. Eloignez les bouteilles de tout circuit électrique ou de tout soudage.
4. Empêchez tout contact entre une bouteille et une électrode de soudage.
5. N'utilisez que des bouteilles de gaz protecteur, des détendeurs, des boyauxs et des raccords conçus pour chaque application spécifique; ces équipements et les pièces connexes doivent être maintenus en bon état.
6. Ne placez pas le visage face à l'ouverture du robinet de la bouteille lors de son ouverture.
7. Laissez en place le chapeau de bouteille sauf si en utilisation ou lorsque raccordé pour utilisation.
8. Lisez et respectez les consignes relatives aux bouteilles de gaz comprimé et aux équipements connexes, ainsi que la publication P-1 de la CGA, identifiée dans la liste de documents ci-dessous.

⚠ MISE EN GARDE ⚠

LES MOTEURS PEUVENT ETRE DANGEREUX

LES GAZ D'ECHAPPEMENT DES MOTEURS PEUVENT ETRE MORTELS.

Les moteurs produisent des gaz d'échappement nocifs.

1. Utilisez l'équipement à l'extérieur dans des aires ouvertes et bien ventilées.
2. Si vous utilisez ces équipements dans un endroit confiné, les fumées d'échappement doivent être envoyées à l'extérieur, loin des prises d'air du bâtiment.

LE CARBURANT PEUR CAUSER UN INCENDIE OU UNE EXPLOSION.

Le carburant est hautement inflammable.

1. Arrêtez le moteur avant de vérifier le niveau de carburant ou de faire le plein.
2. Ne faites pas le plein en fumant ou proche d'une source d'étincelles ou d'une flamme nue.
3. Si c'est possible, laissez le moteur refroidir avant de faire le plein de carburant ou d'en vérifier le niveau au début du soudage.
4. Ne faites pas le plein de carburant à ras bord: prévoyez de l'espace pour son expansion.
5. Faites attention de ne pas renverser de carburant. Nettoyez tout carburant renversé avant de faire démarrer le moteur.

DES PIECES EN MOUVEMENT PEUVENT CAUSER DES BLESSURES.

Des pièces en mouvement, tels des ventilateurs, des rotors et des courroies peuvent couper doigts et mains, ou accrocher des vêtements amples.

1. Assurez-vous que les portes, les panneaux, les capots et les protecteurs soient bien fermés.
2. Avant d'installer ou de connecter un système, arrêtez le moteur.
3. Seules des personnes qualifiées doivent démonter des protecteurs ou des capots pour faire l'entretien ou le dépannage nécessaire.
4. Pour empêcher un démarrage accidentel pendant l'entretien, débranchez le câble d'accumulateur à la borne négative.
5. N'approchez pas les mains ou les cheveux de pièces en mouvement; elles peuvent aussi accrocher des vêtements amples et des outils.
6. Réinstallez les capots ou les protecteurs et fermez les portes après des travaux d'entretien et avant de faire démarrer le moteur.

DES ETINCELLES PEUVENT FAIRE EXPLOSER UN ACCUMULATEUR; L'ELECTROLYTE D'UN ACCUMU-LATEUR PEUT BRULER LA PEAU ET LES YEUX.

Les accumulateurs contiennent de l'électrolyte acide et dégagent des vapeurs explosives.

1. Portez toujours un écran facial en travaillant sur un accumulateur.
2. Arrêtez le moteur avant de connecter ou de déconnecter des câbles d'accumulateur.
3. N'utilisez que des outils anti-étincelles pour travailler sur un accumulateur.
4. N'utilisez pas une source de courant de soudage pour charger un accumulateur ou survolter momentanément un véhicule.

LA VAPEUR ET LE LIQUIDE DE REFROIDISSEMENT BRULANT SOUS PRESSION PEUVENT BRULER LA PEAU ET LES YEUX.

Le liquide de refroidissement d'un radiateur peut être brûlant et sous pression.

1. N'ôtez pas le bouchon de radiateur tant que le moteur n'est pas refroidi.
2. Mettez des gants et posez un torchon sur le bouchon pour l'ôter.
3. Laissez la pression s'échapper avant d'ôter complètement le bouchon.

PRINCIPALES NORMES DE SECURITE

Safety in Welding and Cutting, norme ANSI Z49.1, American Welding Society, 550 N.W. LeJeune Rd., Miami, FL 33128.

Safety and Health Standards, OSHA 29 CFR 1910, Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Recommended Safe Practices for the Preparation for Welding and Cutting of Containers That Have Held Hazardous Substances, norme AWS F4.1, American Welding Society, 550 N.W. LeJeune Rd., Miami, FL 33128.

National Electrical Code, norme 70 NFPA, National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

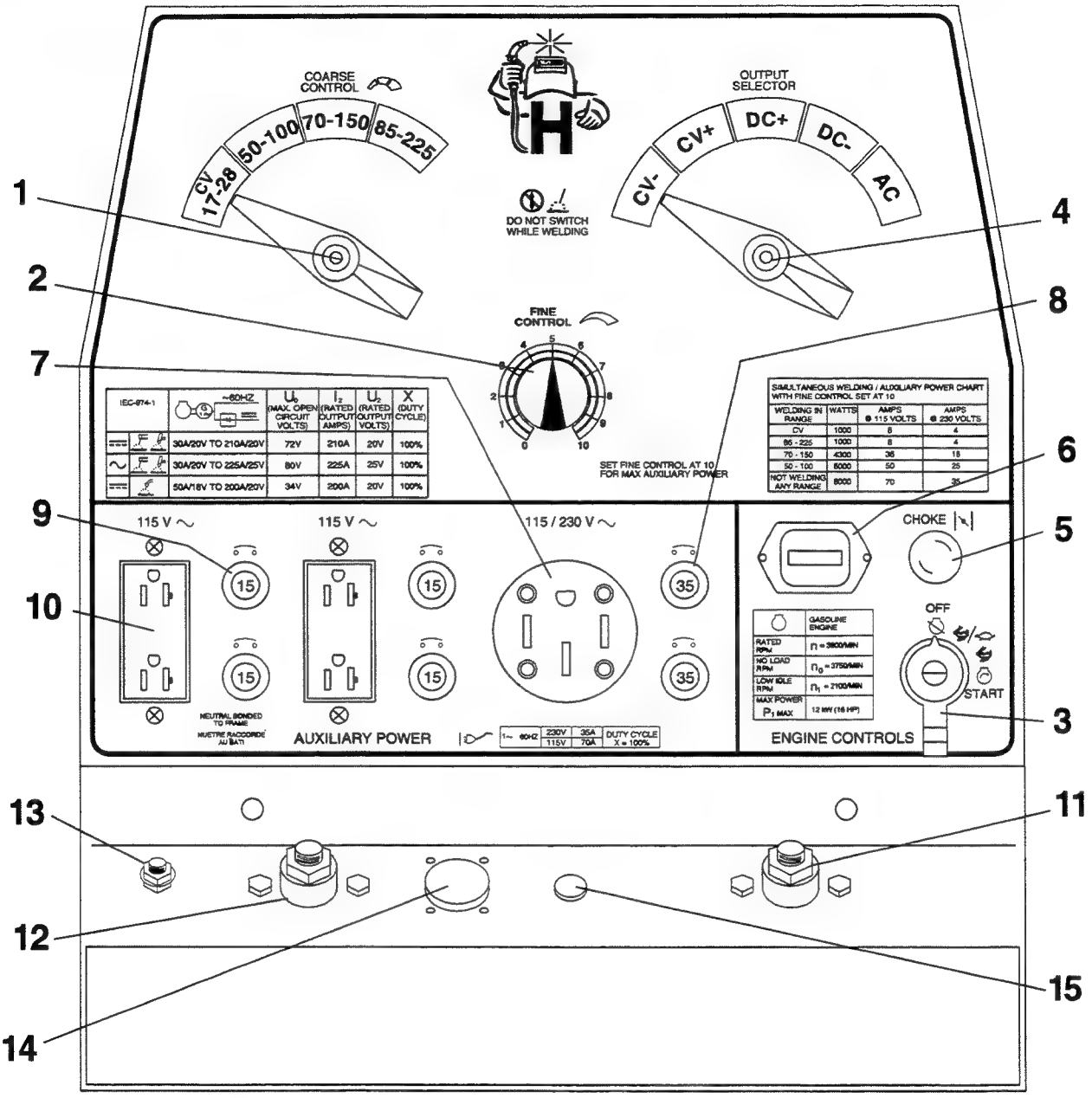
Safe Handling of Compressed Gases in Cylinders, document P-1, Compressed Gas Association, 1235 Jefferson Davis Highway, Suite 501, Arlington, VA 22202.

Code for Safety in Welding and Cutting, norme CSA W117.2 Association canadienne de normalisation, Standards Sales, 276 Rexdale Boulevard, Rexdale, Ontario, Canada M9W 1R3.

Safe Practices for Occupation and Educational Eye and Face Protection, norme ANSI Z87.1, American National Standards Institute, 1430 Broadway, New York, NY 10018.

Cutting and Welding Processes, norme 51B NFPA, National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

DESCRIPTION OF EQUIPMENT



1. Coarse Control
2. Fine Control
3. Ignition/Idle ON/OFF
4. Output Selector Switch
5. Choke Control
6. Engine Hour Meter
7. 115/230 Volt Receptacle
8. 35 Amp Circuit Breakers
9. 20 Amp Circuit Breakers
10. 115 Volt Receptacles
11. Electrode Welding Output Terminal
12. Work Welding Output Terminal
13. Frame Ground Terminal
14, 15. Optional Remote Fine Current Control

Figure 3-1 Control Panel

Controls And Power Outlets

Refer to Control Panel, Figure 3-1

1. Coarse Control selects one of three Constant Current (CC) welding ranges and one Constant Voltage (CV) welding range.

2. Fine Control is used to make fine amperage adjustments in any of the CC ranges or fine voltage adjustments in the CV range. Turn the knob clockwise to increase the welding current in CC or welding voltage in CV.

3. Ignition/Idle ON/OFF

The first position is "OFF", use this position to shut down the engine.

In the second position the engine will automatically switch from normal speed to low idle under a normal load condition, after a 10 to 15 second delay. The engine will automatically return to normal speed when a load is applied (either weld or auxiliary power). This is known as "Auto Idle On" position.

In the third position the engine will always run at normal speed, this is also known as the "Run" position.

The fourth position is the "Start" position. It allows the starting motor to energize. When the switch is released, it will return to the "Run" position.

NOTE: The Champion 16 is equipped standard with an engine protection shutdown system. In case of insufficient oil pressure the engine will shut down by itself. During engine startup this system is automatically bypassed.

4. Output Selector Switch allows for easy switching from DC straight polarity (DCEN), to DC reverse polarity (DCEP), and to AC welding.

5. Choke Control — Push in for "CHOKE OFF". Pull out for "CHOKE ON".

6. Engine Hour Meter — Operates only while engine is running.

7. 115/230 Volt Receptacle — The 115/230 dual voltage receptacle is protected by two 35 amp circuit breakers. The continuous load should not exceed 35 amps on this receptacle.

8. 35 Amp Circuit Breakers protect the 115/230 volt receptacle, preventong over current, and protecting generator windings. Push to reset.

9. 20 Amp Circuit Breakers (15 Amp Circuit Breakers on CSA units). Push to reset.

10. 115 Volt Receptacles.

The load drawn from these 115 volt receptacles cannot exceed 20 amps per receptacle, or a total of 70 amps.

On CSA units, the load drawn from these 115 volt receptacles cannot exceed 15 amps per receptacle, or a total of 60 amps.

11. Electrode Welding Output Terminal (see OPERATION chapter for further details).

12. Work Welding Output Terminal (see OPERATION chapter for further details).

13. Frame Ground Terminal — Use this terminal to ground the unit to your truck bed or trailer frame. This is especially important if the unit is insulated from the truck or trailer in any way. **This is not a weld terminal.**

14,15. These holes are for an optional remote fine current control. Ask your dealer for details.

Tabulated Data

Weld Data	AC	DC	CV
Max. OCV	80	72	32
Amps	225	210	200
Volts	25	25	20
Duty Cycle	100%	100%	100%

Power Data

Watts	8000
Volts	230
Amps	35
Type	AC, 60 Hz, 1 Ph.

Dimensions

(see Figure 3-2)

Weights

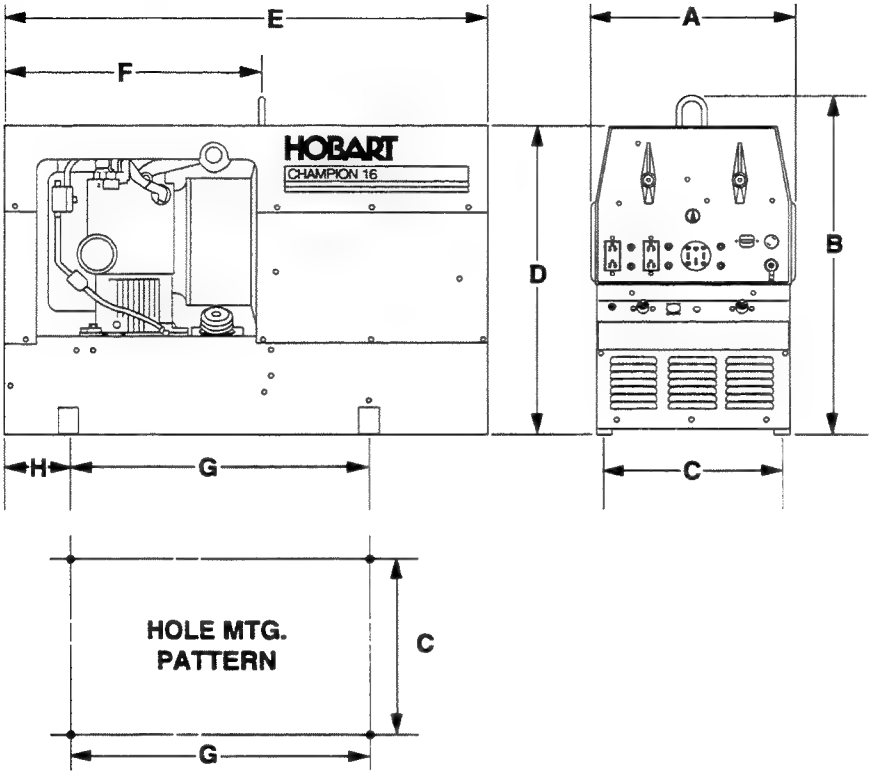
Net (No Fuel)	580 lbs
Gross (Full Fuel)	633 lbs
Shipping	604 lbs

Engine Specifications

Make	Onan
Model	P216
Horsepower	16
Displacement	43.3 cu. in. (710 cc)
Speed with load	3600 RPM

Idle speed.....2100 RPM
Fuel capacity.....8 gallons
Oil capacity.....2.5 quarts
Charging system.....20 amp (regulated)

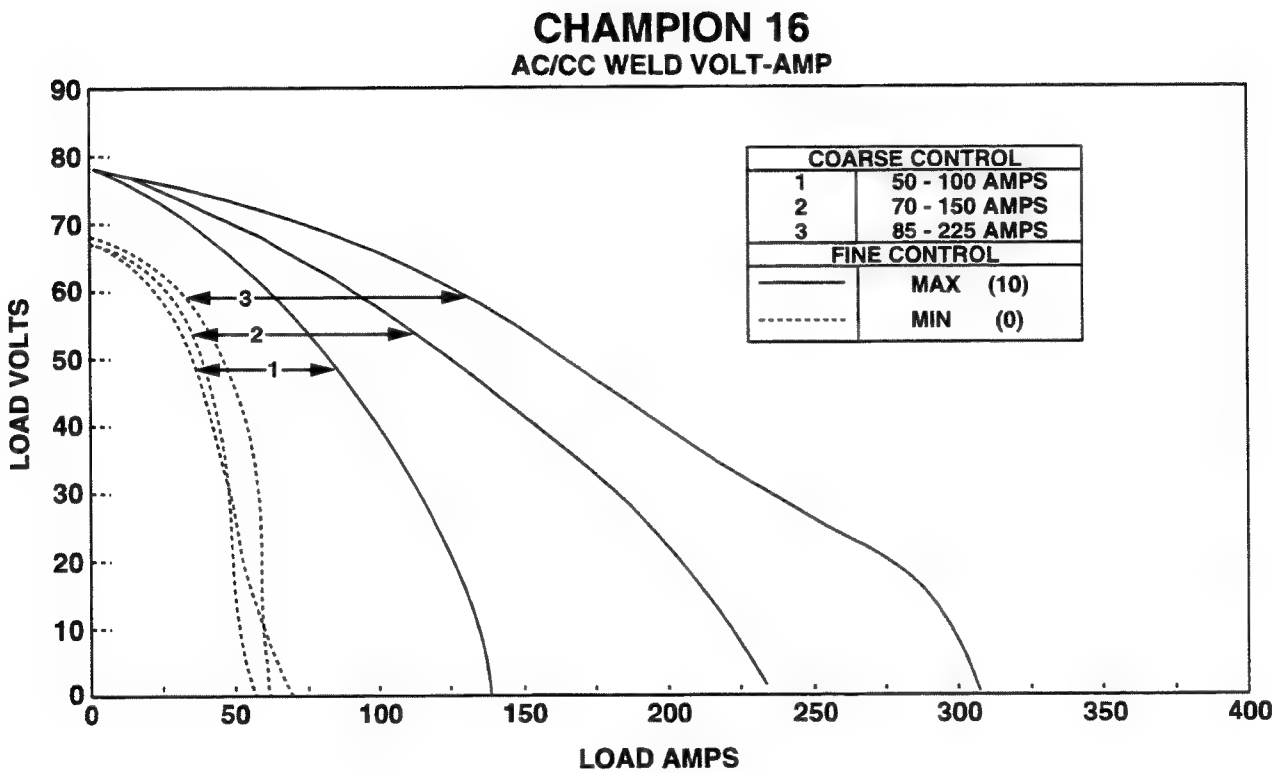
NOTE: Spark plug gap is .025". Do not purchase plugs with .060" preset gap as adjusting these could cause plug damage or poor spark.



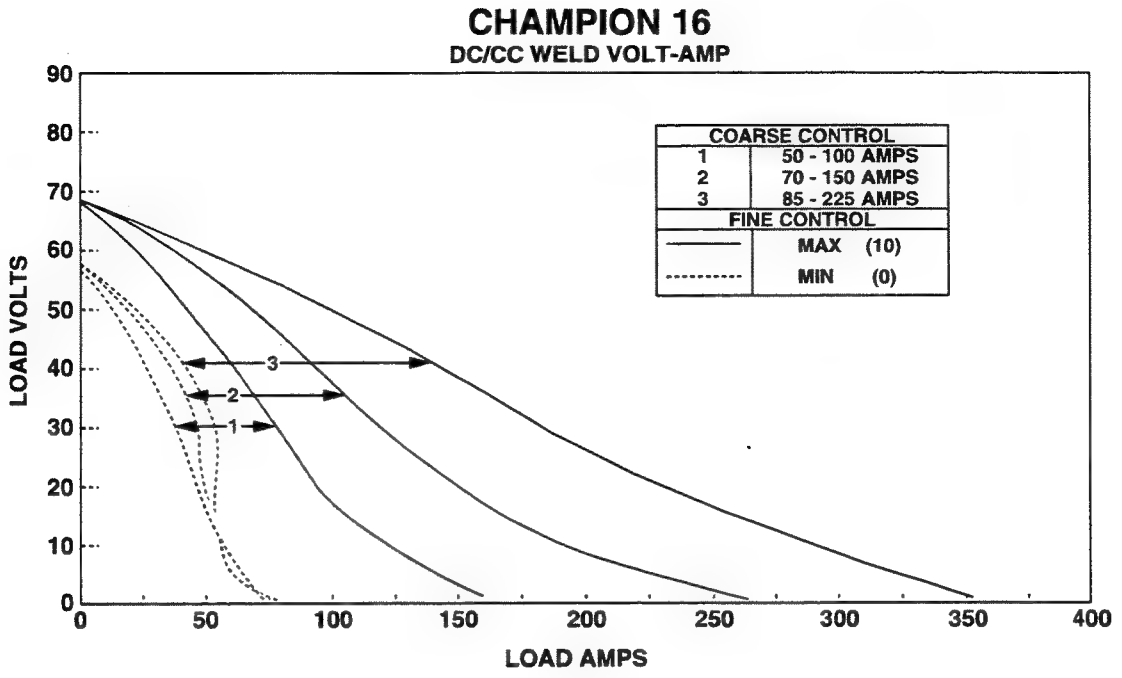
A 19.5 in. = 496 mm max.
B 32.437 in. = 824 mm max.
C 16.5 in. = 420 mm
D 29.5 in. = 750 mm
E 45.5 in. = 1156 mm max.
F 25 in. = 635 mm
G 28 in. = 712 mm
H 6 in. = 152 mm

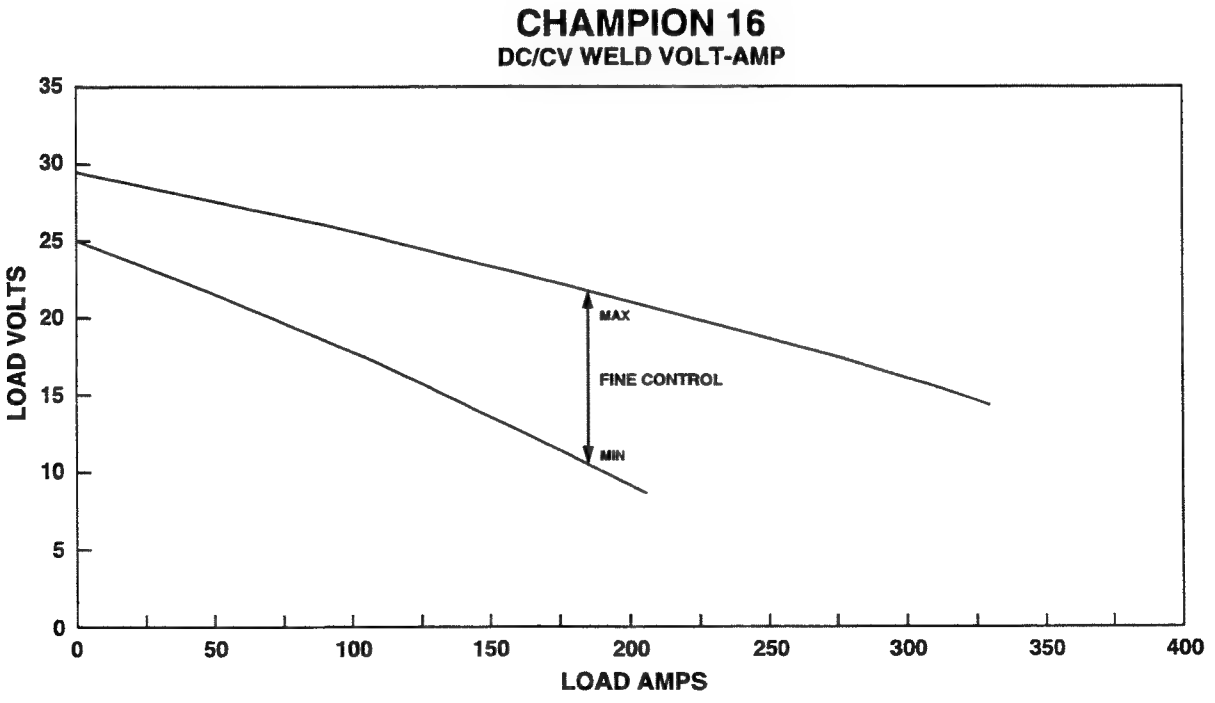
NOTE: Mounting holes, located by "C" and"G" dimensions.

Figure 3-2 Dimensions

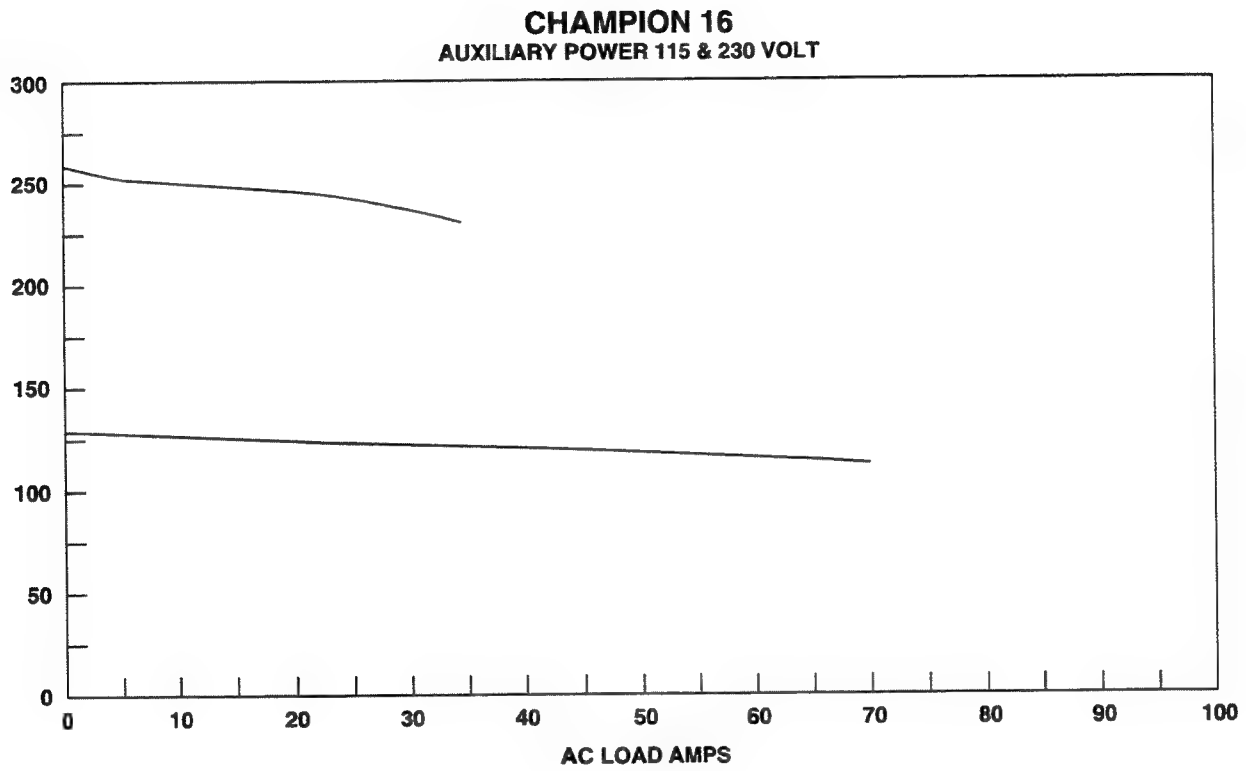


Champion 16 AC/CC Weld Volt Amp Curve





Champion 16 DC/CC And DC/CV Weld Volt Amp Curve



Champion 16 Auxiliary Power Volt Amp Curve

Maximum Auxiliary/Welding Power Combinations

Welding range.....CV	3	2	1	Not Welding
Watts.....1000	1000	4300	6000	8000
Amperes				
@115 volts.....8	8	36	50	70
@230 volts.....4	4	18	25	35

NOTE: Welding current fine control must be set at 10 to obtain full rated auxiliary power.

INSTALLATION

General Engine Driven Welder Installation

The frame of a Hobart Brothers Company engine driven welder is intended to be a base to hold the welder components together. This frame is not intended to be the primary structure of a trailer or wagon. This welder is intended to be installed on a rigid, flat surface. This surface must allow the weight of the welder to be distributed evenly along the length of the welder frame.

Before choosing an installation location, make note of where the service items are located on the welder (oil change/fill, battery, air filter, fuel fill, etc.). Install the welder for best access to the important service items. Allow sufficient room for cooling air intake and exhaust.

If you are unsure about any installation, consult the factory.

Portable Installation

CAUTION: Do not use the frame assembly of this welder as the frame of a trailer (do not attach axles or tongues directly to this frame).

Trailer Installation:

When a trailer is required, use only trailers with its own support frame that has a gross weight rated to carry the weight of the welder and any other components mounted on the trailer. Be sure welder frame and trailer frame are electrically bonded together.

Truck Bed Installation: When installing the welder on the bed of a truck, allow the welder to sit flat on the bed, or a surface which completely contacts the bottom of the welder frame.

CAUTION: Do not modify the welder frame by cutting or otherwise damaging it or the warranty may be voided.

Bolt the welder frame to the bed to secure it. Be sure welder frame and truck frame are electrically bonded together.

Ground Installation: The welder will operate perfectly fine just sitting on the ground, with or without the shipping skid. No special precautions are required.

NOTE: Operate the unit in a level position, and never at a tilt more than 15° from horizontal.

Location

When selecting an installation site, take care to avoid exposing the unit to high humidity, dust, high ambient temperature, or corrosive fumes. Moisture condenses on electrical parts, causing corrosion or short circuits. Dirt on parts retains moisture and increases wear on moving parts.

Provide at least 2 feet (610 mm) of space on all sides for adequate air ventilation and servicing. Make sure ventilator openings are not obstructed.

Safety

Refer to additional installation instructions under Safety Warnings chapter included in this manual.

Indoor Use

Provide adequate ventilation to carry off exhaust fumes and to provide an ample supply of oxygen. Place unit so that short exhaust pipes may be used. Avoid bends as back pressure can affect engine efficiency. All exhaust connections must be gas tight. Consider installation of an LPG (propane) fuel operation kit. Consult your distributor for propane kit number.

Initial Preparation for Use

1. Inspect unit thoroughly. Secure all fuel and wire connections. Tighten any loose screws, nuts, or bolts. Check closely for any damage that may have occurred in transit.

2. Remove all special tags from the unit, read and carefully follow special directions. Keep tags with manual for future reference.

3. Engine crankcase has been filled with oil at factory. Check dipstick. Add oil if required. Check engine operator's manual for correct type. Do not overfill.

4. All air passages and cooling fins must be free of foreign matter. Use clean, dry compressed air to blow dirt and dust out of cooling passages and control cabinet, 25 psi (172 kPa) maximum pressure.

5. The Storage Battery is shipped dry and Automotive Type Battery acid (Spec Gr. 1.265) must be added to activate the battery. After adding the acid, allow the battery to soak approximately 1 hour and top off with battery acid if necessary. To bring the battery up to full charge, boost charge for 1 hour at 15 amps.

6. Attach negative battery cable to negative battery terminal.

7. Fill fuel tank with recommended grade of fuel. (Consult Engine Operator's Manual.) Fuel must be free of water and other foreign matter.

WARNING: See Safety Warnings chapter included in this manual relative to filling gas tanks.

8. Proceed to Operation chapter. For more information, refer to the Engine Operator's Manual.

Welding Current Amperes	TOTAL LENGTH OF LEAD CIRCUIT IN FEET (AND METERS) (ELECTRODE PLUS WORK LEAD)				
	50 Feet (15 240 mm)	100 Feet (30 480 mm)	150 Feet (45 720 mm)	200 Feet (60 960 mm)	250 Feet (76 200 mm)
100	#4	#4	#2	#1	#1
150	#2	#2	#1	#1/0	#2/0
200	#1	#1	#1/0	#2/0	#3/0

NOTE: Cable size shown is 90°C (194°F) cable insulation, 30°C (86°F) ambient, and not over 4.5 volts cable drop.

Table 4-1

OPERATION

Prestart Instructions

1. Inspect unit to make sure ventilation openings are free of obstructions. Remove any obstructions such as leaves, paper, plastic, etc.

2. Check air filter element,

3. Check oil level. Add oil as required. Do not overfill. Wipe up any spilled oil before starting engine.

4. Check fuel level. Fill tank as required with gasoline as recommended by engine manufacturer. Do not overfill. Wipe up any spilled fuel before starting engine. If engine is hot, allow it to cool for several minutes before adding fuel to tank. Never add fuel to tank while engine is running.

5. Connect welding leads, power cables, etc. for intended operation. See appropriate section for operation as a welder or AC power generator.

WARNING: Remove all loose items such as parts, tools, etc. from on or around machine, as they could damage machine or injure personnel.

6. Check throttle linkage at idle solenoid for free movement of linkage. If linkage does not move freely at idle solenoid, do not start engine.

7. Engine is now ready to be started. Refer to Starting Engine sections.

Starting Engine (Cold Start)

1. Pull out choke (choke on).

2. Place Ignition/Idle On-Off switch in"START" position.

CAUTION: Do not hold the ignition switch in "START" position for more than 30 seconds, as this can damage starter. If engine does not start in 30 seconds, return switch to off and wait 1 minute before attempting another start.

3. When engine has started, release Ignition/Idle On-Off switch. It will automatically return to the run position (Fast Idle).

4. Slowly push choke in. If engine begins to stall, pull choke out again and slowly push in. Repeat as necessary until engine is running smoothly with choke control all the way in.

5. Allow engine to warm-up for a few minutes before applying any load on 115/230 volt receptacles or welding.

Starting Engine (Warm or Hot Starts)

1. Place ignition in "START". Engine should start immediately. If it does not, some use of the choke may bee needed to clear vapor in the carburetor. While engine continues to crank, pull choke out.

CAUTION: Do not hold the ignition switch in "START" position for more than 30 seconds, as this can damage starter. If engine does not start in 30 seconds, return switch to off and wait 1 minute before attempting another start.

2. When engine starts, release Ignition/Idle On-Off switch. It will automatically return to the run (High Idle) position.

3. Return choke quickly to the In position.

Automatic Idle Control System

This machine is equipped with an Electromechanical Automatic Idling device. This system when activated will automatically lower the engine speed from a fast idle of 3750 RPM to a slow idle of 2100 RPM when there is no external electrical load on the generator either from welding or from the 115/230 receptacle. The engine will automatically slow after an approximate 10-15 second delay. The engine will automatically accelerate upon application of a welding or receptacle load. To activate the automatic idle feature, place the Ignition/Idle On-Off switch in the auto idle (second) position. To override the automatic idle feature, place the Ignition/Idle On-Off switch in the fast idle (third) position. In this position the engine will continue to run at its fast idle speed of 3750 RPM. This is the recommended operating position when using the machine for CV welding and for operation as an AC power generator, particularly when starting motors from the 115/230 receptacles.

Stopping Engine

1. Remove any load from 115/230 volt receptacles and/or stop welding.

2. If Ignition/Idle On-Off switch is not already in the auto idle (second) position, place switch in auto idle position.

3. Allow engine to run for a few minutes in low idle speed to cool down cylinder heads and oil.

4. Place Ignition/Idle On-Off switch "OFF"

Operation As A Welder (CC)

WARNING: Serious personal injury could result if you connect or disconnect welding leads while the engine is running, as open circuit voltage is present at the terminals. Always stop engine to connect or disconnect cables.

1. Connect the ELECTRODE lead to the Electrode Terminal on the Control Panel (See Description of Equipment). Connect the WORK lead (with the clamp on the end) to the Work Terminal on the Control Panel.

2. For DC Welding, determine which polarity is correct for the type of electrode being used.

   a. For STRAIGHT polarity (DCEN), switch the Output Selector Switch on the Control Panel to the "DC–" position.

   b. For REVERSE polarity (DCEN), switch the Output Selector Switch on the Control Panel to the "DC+" position.

3. For AC welding, switch the Output Selector Switch to the "AC" position.

   NOTE: See Table 4-1 for size of welding leads required for various welding currents.

4. Set coarse control for correct amperage range 1 to 4 for the size electrode being used.

5. Set fine control on control panel (or optional remote) for amperage desired for the job to be done.

6. Start engine per section on "Starting Engine".

WARNING: DO NOT ATTEMPT TO WELD WITHOUT FIRST READING AND UNDERSTANDING THE SAFETY WARNINGS CHAPTER INCLUDED IN THIS MANUAL.

Operation As A Welder (CV)

WARNING: Serious personal injury could result if you connect or disconnect welding leads while the engine is running, as open circuit voltage is present at the terminals. Always stop engine to connect or disconnect cables.

1. Connect the welding lead from the wire feeder to the electrode terminal on the Control Panel (see Description of Equipment). Connect the welding work lead (with the clamp on the end) to the Work Terminal on the Control Panel.

2. Select correct welding polarity for type of wire being used.

   a. For straight polarity (DCEN), set output selector switch on the control panel to the "CV–" position.

   b. For reverse polarity (DCEP), set output selector switch on the control panel to the "CV+" position.

3. Set the coarse control selector on the control panel to the "CV" position.

4. Set the fine control on the control panel (or optional remote) for correct voltage setting for type, size, and wire feed speed of wire being used.

   NOTE: AC welding output is not applicable in the CV welding mode.

   NOTE: See Table 4-1 for size of welding leads required for various welding currents.

5. Start engine per section on "Starting Engine".

WARNING: DO NOT ATTEMPT TO WELD WITHOUT FIRST READING AND UNDERSTANDING THE SAFETY WARNINGS CHAPTER INCLUDED IN THIS MANUAL.

Operation As AC Power Generator

1. Start engine per section on "Starting Engine".

NOTE: The engine governor setting is factory set at approximately 3600 RPM.

CAUTION: Warranty is void if the governor setting is altered.

2. Power may be drawn from any of the receptacles to operate lights or small hand tools.

3. The 115 Volt Duplex Receptacles (Item 10 in "Description of Equipment") supply full 8000 watt capacity. Connection to the generator is by standard three prong plugs attached to proper sized three wire cables. Each receptacle supplies a maximum of 20 amperes (on 500252-1 units) or a maximum of 15 amperes (on 500252A-1 units), up to a total of 70 amperes.

The 115/230 Volt Receptacle (Item 7 in "Description of Equipment") can be used to supply two 115 volt circuits of 35 amperes maximum each, on either side of neutral, or one 230 volt, 35 amperes maximum circuit for a maximum of 8000 watts generator output. The matching plug for this 4 prong receptacle is available as an optional accessory, or can be found at most electrical supply stores.

CAUTION: Improper use of receptacle by exceeding load ratings can damage the receptacles and/or the generator.

Set "Fine Control" dial to 7 or higher to obtain rated auxiliary power.

Construction Site Use Of Portable Welding Generators

It is the user's responsibility to insure that the use of this equipment conforms to all applicable local, state, and national codes. The use of the 120 volt receptacles on this unit at construction sites for hand tools is covered by section 1910.304 of OSHA, Safety and Health Standards 29CFR1910 and section 210-8 of NFPA Standard 70, National Electric Code. Compliance with these codes will require the use of ground fault circuit interrupters. Refer to the text of the above safety codes for details.

Standby Power Source

In the event of a power failure, the unit may be used as a standby power source. The unit must be connected by a Licensed Electrician, utilizing a proper transfer switch, and complying with all applicable electrical codes.

A transfer switch ensures that voltage is not fed back into the utility power lines. This will protect linespersons working to correct the failure, and prevents damage to the generator when power is restored.

The unit frame must be grounded to the premises system ground. DO NOT exceed the maximum load handling capacity of the unit. Apply and remove loads in gradual steps to reduce voltage transients from engine RPM variations.

WARNING: EXHAUST FUMES CAN KILL! Be sure of adequate ventilation for indoor operation. Use a leakage-proof exhaust line to the outside for safety operation. DO NOT place the unit in an attached garage, or any structure where exhaust fumes will become a hazard to persons or animals.

1. Connect proper sized cable from Transfer Switch to 115/230 Volt Receptacle (Item 7*).

2. Start engine per "Prestart Instructions."

3. Turn OFF all loads, including those to be supplied by the unit.

4. Set transfer switch to stand-by and gradually turn on desired loads. DO NOT exceed generator capacity.

5. Some loads may need to be temporarily reduced in order to start freezers or refrigerator motors.

The plug for connecting to the 115/230 volts receptacle can be wired to supply 230 volts, 2-wire load, or a 115/230 volts, 3-wire load (see Figure 5-1).

WARNING: ELECTRIC SHOCK CAN KILL! IMPROPER CONNECTIONS CAN DAMAGE EQUIPMENT. DO NOT TOUCH LIVE ELECTRICAL PARTS!

Wire the 115/230 volts plug as follows:

a. Strip cord jacket back only far enough to separate conductors. Strip conductors back only enough to make good contact with plug terminals (Refer to Figure 5-1).

b. Make load and ground connections to plug.

c. Reinstall insulated cap.

When Utility Power Is Restored

1. Gradually reduce the loads on the unit.

2. Set the Transfer Switch to the Utility Power (Normal) position.

3. Allow the unit to run for 5-10 minutes at no load to cool cylinder head.

4. Stop engine.

5. Return all premises back to normal utility power operation.

Storage

Nightly — Before storing welding machine for short periods of time:

1. Clean up around work area. Put all tools, parts, and supplies in proper places.

2. Disconnect welding leads from machine. Coil them and stow away.

3. If unit is to be stored outside, cover it with a tarpaulin.

Extensive Storage Time — If unit is not to be used for 30 days or more, drain the fuel tank, carburetor, fuel pump, and fuel lines. Cover the unit with a tarpaulin to protect it from dirt, dust, and excessive moisture. See Storage Instructions in Engine Operator's Manual.

Operation In Extremely Cold Weather

See engine operation in the Operator's Manual furnished for the engine. Tune engine to best possible condition for cold weather operation.

Fuel System and Fuel — Clean the carburetor, gasoline lines, fuel pump, and make sure that no water collects in gas tanks or fuel lines, due to condensation. A small amount of "dry gas" or denatured alcohol added to the fuel will aid in preventing this condition.

Overrich fuel mixture causes excessive carbon deposits, dirty and wet spark plugs, as well as crankcase dilution.

Strain the fuel, when storing it, to remove water. Keep fuel tanks and drums as full as possible. Container must e free from dirt and rust. Fuel must be allowed to settle in container before drawing it out for use in the engine. Never draw fuel fuel from the extreme bottom of the container. Prevent entry of snow, water, and ice into fuel containers.

Lubrication — Drain engine crankcase while engine is warm, and refill with a lighter grade of oil than that used in warm weather. See oil viscosity chart in engine manual. Drain oil more frequently to avoid harmful sludge forming in crankcase, and possible damage to oil pump.

Electrical System — Check the entire system for loose connections or indications of bad wiring or shorted connections. Check spark plugs for proper gap. For proper plug gaps, consult the Engine Operator's Manual for the engine.

Battery — Battery efficiency decreases sharply with lower temperatures. Maintain the specific gravity of the battery between 1.275 and 1.300 (fully charged condition). Make sure of full charge before attempting to start engine in sub-zero conditions.

Operation In Extremely Dusty Conditions

Place unit in a sheltered area and take advantage of natural barriers which may offer protection from blowing dust. If the installation is more than temporary, erect a protection shield.

Fuel System — Drain fuel pump sediment bowl often. Keep all containers covered and protected against dust entry.

Oil Filter and Air Cleaner — Check air cleaner daily. Service or replace element as needed. Replace oil filter as recommended in Operator's Manual. Always use Onan approved replacement filters. Contact the nearest Onan engine service center for correct replacement part numbers.

Crankcase — Watch for dirty and gritty oil conditions, and change oil more frequently.

Cooling System — Clean cooling fins and chaff screen regularly.

Operation In Salt Water Atmosphere

Canopy — Wash canopy regularly to remove salt film. Repaint damaged places.

Covering — To protect the engine and generator from salt water atmosphere, keep the unit covered with a tarpaulin while not in operation. Wipe salt water from the engine, and from all terminals and connections in the electrical system. Oil all linkage.

Brushes — Regularly inspect the generator brushes to make sure they are free in the holders. Wipe dry all parts or use compressed air (of not more than 25 psi, 172 kPa) pressure. See Maintenance chapter for brush care.

Battery Terminals — Thoroughly clean the battery terminals and connection. Coat terminals and connections with petroleum jelly to retard corrosion.

This page intentionally left blank.

MAINTENANCE

Lubrication — Engine

For detailed instructions on engine lubrication, see Engine Operator's Manual.

Inspection And Cleaning

Every Day — Check for oil and fuel leaks. Also check for loose electrical connections.

Every Week — Wipe accumulated dust, dirt, and oil off engine and generator. Check parts for looseness and signs of wear. If arcing has occurred at any electrical connection, recondition it and securely refasten. Check engine oil level in crankcase.

Every Month — Blow out generator windings with compressed air, not over 25 psi (172 kPa) pressure, or remove dirt with a suction-type cleaner with a non-metallic nozzle. If windings should become slightly damp, use space heaters or electric light bulbs to effectively dry out the windings. If dampness is excessive, apply external heat under a canvas cover, well vented. Heating should not exceed 194° F (90° C).

Brush Inspection And Replacement

Inspection — Every three months (weekly during heavy usage in dust laden air), inspect brushes. If brushes are worn unevenly or are shorter than ¼ inch (6mm) long, replace them. See Figure 6-1 for location.

CAUTION: Do not allow any brush to wear far enough that the wire lead embedded in the brush can rub on the slip rings, and cause excessive arching.

Replacement Procedure

1. Disconnect leads from connectors on brushholder caps.

2. Remove screws which hold brushholder in place and remove brushholder assembly.

3. Inspect slip rings whenever servicing brushes or brushholders. Surface should appear smooth and clean. Scoring or roughness of slip rings may be caused by grit or abrasive substance in brushes, or by oil on the rings. Moderately rough slip rings can be smoothed by holding grade 00 flint paper against their surface while the rings are revolved slowly. If the rings are badly scored, the unit must be sent to an overhaul facility for repair. After cleaning slip rings, blow dirt and grit out of the unit with compressed air.

4. Install new brush assembly.

5. To fit new brushes to the slip rings, lay a strip of No. 00 sandpaper, smooth side down, on slip ring surface, and draw the sandpaper in the direction of the slip ring. At the same time, lift the brush on the return stroke. Continue until the brushes have same curvature as the slip rings. Blow all carbon dust out of the machine.

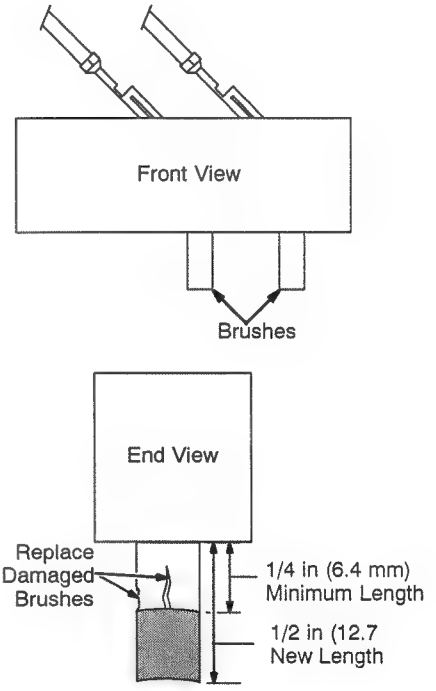


Figure 6-1 Brush Assembly

This page intentionally left blank.

TROUBLESHOOTING

Troubleshooting Guide

Generator

No welding and auxiliary power receptacle voltage (does not "build-up").	
Check for load on terminals or power receptacles.	Remove load.
Check for loose connections.	Reconnect and/or tighten.
Check for worn brushes.	Replace brushes as necessary. See Maintenance chapter.
Check for dirty slip rings	Clean or refinish slip rings. See Maintenance chapter.
Check for "open" revolving field L1-D.	Repair or replace armature if defective.
Check rectifier bridge CR1.	Replace defective bridge.
Check for defective stator winding L1-C 5-6, 7-8.	Repair or replace windings.
Welding current OK, no auxiliary power at receptacles.	
Check stator windings L1-B 1 to 2, 3 to 4.	Repair windings or replace stator as necessary.
Check circuit breakers.	Reset breakers as necessary.
Loose connections?	Repair as needed
Receptacle power OK, but no weld power.	
Check for loose connections in welding circuit.	Repair as necessary.
Check Reactor L2	Replace Reactor if necessary.
Defective Stator Winding L1-A 9 to 10 and 11 to 12.	Repair winding or replace stator.
Range Switch (S1), Output selector Switch (52) not set properly.	Set Switch properly.
Receptacle power weak, welding output OK.	
Fine Control not set properly.	Set to 7 or higher.
Loose connection.	Repair.
Defective Receptacle J1, J2, J3, J4, J5.	Replace receptacle.

Receptacle power OK, welding output weak.	
Loose connection in welding circuit.	Repair connection(s).
Open circuit, weld and power voltage low, frequency low	
Engine speed too slow.	Adjust for 3720 Rpm or 62 Hz at NO Load.
Open circuit voltage and frequency high.	
Engine speed too fast.	Adjust for 3720 Rpm or 62 Hz at NO Load.
No Fine Control of weld amperes (in CC) or volts (in CV).	
Engine will not go to slow idle.	
Ignition on/off switch not set correctly?	Set correctly.
Load on weld terminals or receptacles?	Remove load.
Defective diode on welding rectifier (CR2)?	Replace defective diode.
Defective idle solenoid (K2)?	Replace defective solenoid.
Engine stays in low idle when load is applied.	
Loose connection from T1 to control PC board?	Repair connection.
Defective idle sensing transformer (T1)?	Replace transformer.
Engine will not crank.	
Loose connection to battery or starter?	Repair connection.
Dead battery?	Charge and/or replace battery.
Engine will not start or run.	
Out of gas?	Fill tank as necessary.
Low Oil?	Check oil, maintain level between "ADD" and "FULL" on dip-stick. Do not overfill.
Oil overfull?	See low oil.
Loose connection on engine wiring?	Repair connection.
Defective engine component?	See authorized engine repair shop.

PARTS LIST

Equipment Identification

All identification numbers as described in the Introduction chapter must be furnished when ordering parts or making inquiries. This information is usually found on the nameplate attached to the equipment. Be sure to indicate any dash numbers following the Specification or Assembly numbers.

How To Use This Parts List

The Parts List is a combination of an illustration (Figure Number) and a corresponding list of parts which contains a breakdown of the equipment into assemblies, subassemblies, and detail parts. All parts of the equipment are listed except for commercially available hardware, bulk items such as hardware, bulk items such as wire, cable, sleeving, tubing, etc., and permanently attached items which are soldered, riveted, or welded to another part. The part descriptions may be indented to show part relationships.

To determine the part number, description, or quantity, simply locate the item in question from the illustration and refer to that item number in the corresponding Parts List.

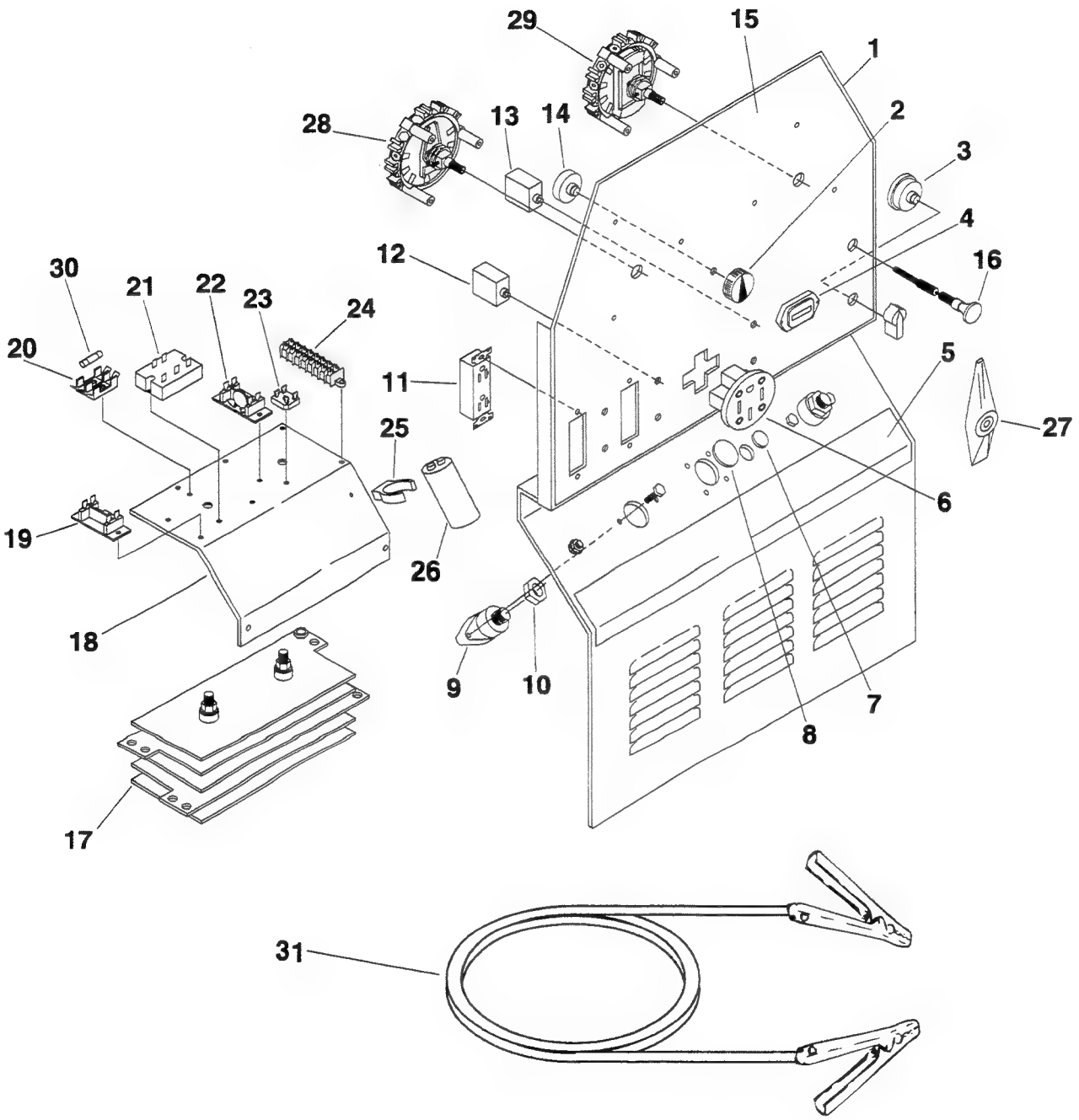


Figure 8-1 Control Panel Group

Item No.	Dia. Mkgs.	Part No.	Description	Quantity

Figure 8-1 Control Panel Group

1		494917	PANEL, control	1
2		097924	KNOB, control	1
3		494754	SWITCH, ignition	1
4	M1	176365	METER, hour	1
5		494774-1	LABEL, identification	1
6	J5	408902	RECEPTACLE, 230V	1
7		403091-3	PLUG, hole plastic	1
8		403091-9	PLUG, hole plastic	1
9		494613	TERMINAL, output	2
10			NUT, 1/2-13 HWH ST	2
11	J1-J4	494755	RECEPTACLE, duplex 20A	2
12	CB1-CB4	495098	SWITCH, circuit breaker 20A	4
12	CB1-CB4	495097	SWITCH, circuit breaker 15A (CSA)	4
13	CB5-CB6	409527-2	SWITCH, circuit breaker 35A	2
14		494898	RHEOSTAT, 100W 10 ohm	1
15		494914	NAMEPLATE, overlay	1
16		494925	ROD, choke	1
17		142503	RECTIFIER, assembly	1
18		494895	PANEL, mounting rectifier	1
19		494891	DIODE BOARD	1
20		494892	HOLDER, fuse	1
21		184731	MODULE, idle	1
22		046819	SUPPRESSOR, assembly	1
23		494894	RECTIFIER	1
24		401937-11	BLOCK, terminal 8 station	1
25		494915	CLAMP, capacitor	1
26		405278-17	CAPACITOR	1
27		494845	HANDLE, switch to switches	2
28		494900	SWITCH, range	1
29		494910	SWITCH, selector	1
30		494938-1	FUSE, abc 25A 125V	2
31		494646	KIT, accessory weld	1

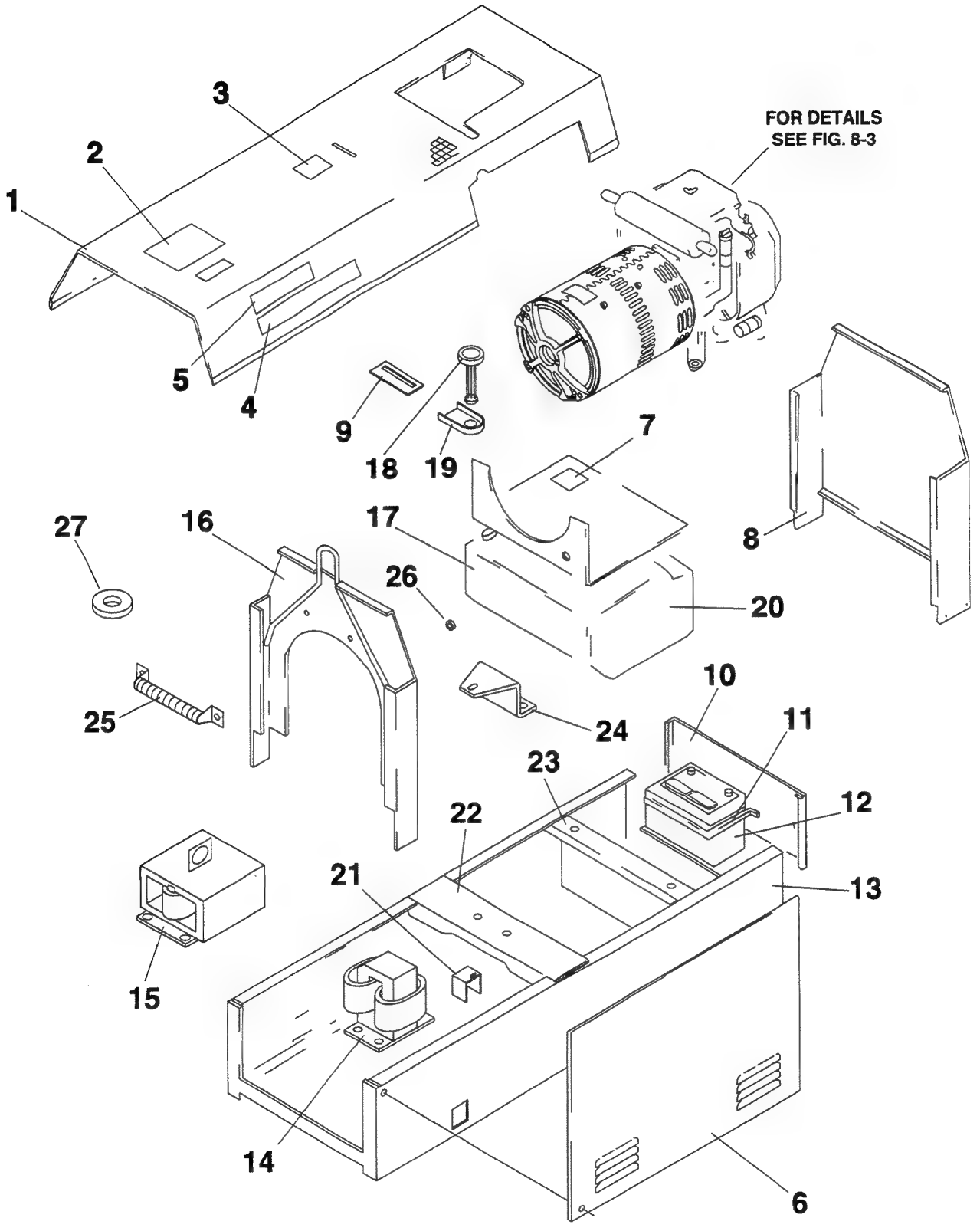


Figure 8-2 Frame Group

Item No.	Dia. Mkgs.	Part No.	Description	Quantity
			Figure 8-2 Frame Group	
1		494918	TOP, canopy	1
2		495096	LABEL, precautionary	1
3		409158	LABEL, danger lifting eye	1
4		494745-1	LABEL, identification	2
5		494744-1	LABEL, Hobart	3
6		494776	PANEL, side	2
7		406000	LABEL, warning fuel	1
8		494775	PANEL, front	1
9		494799	GROMMET, lifting eye	1
10		494790	TRAY, battery	1
11		494168-1	CLAMP, battery	1
12		Ref.	BATTERY, 12VDC group 24	1
		494083-1	CABLE, battery positive	1
		494084-1	CABLE, battery negative	1
		493797-2	PROTECTOR, battery terminal	2
		W-9648-67	CABLE, bonding	1
13		494916	BASE, mounting	1
14	L3	494758A	REACTOR, filter	1
15	L2	183 605	REACTOR, control	1
16		494773	YOKE, lifting assembly	1
17		493915	TANK, fuel	1
18		493965-1	CAP, fuel gage	1
19		494795	GROMMET, fuel tank	1
20		494791	COVER, fuel tank	1
21		494794	GUARD, base	2
22		494919	SUPPORT, engine	1
23		494920	SUPPORT, generator	1
24		494932	FOOT, mounting generator	1
25		184278	RESISTOR, 225W 4.25 ohm	1
26		402037-13	GROMMET, rubber	1
27		494924	TRANSFORMER, current sensing	1

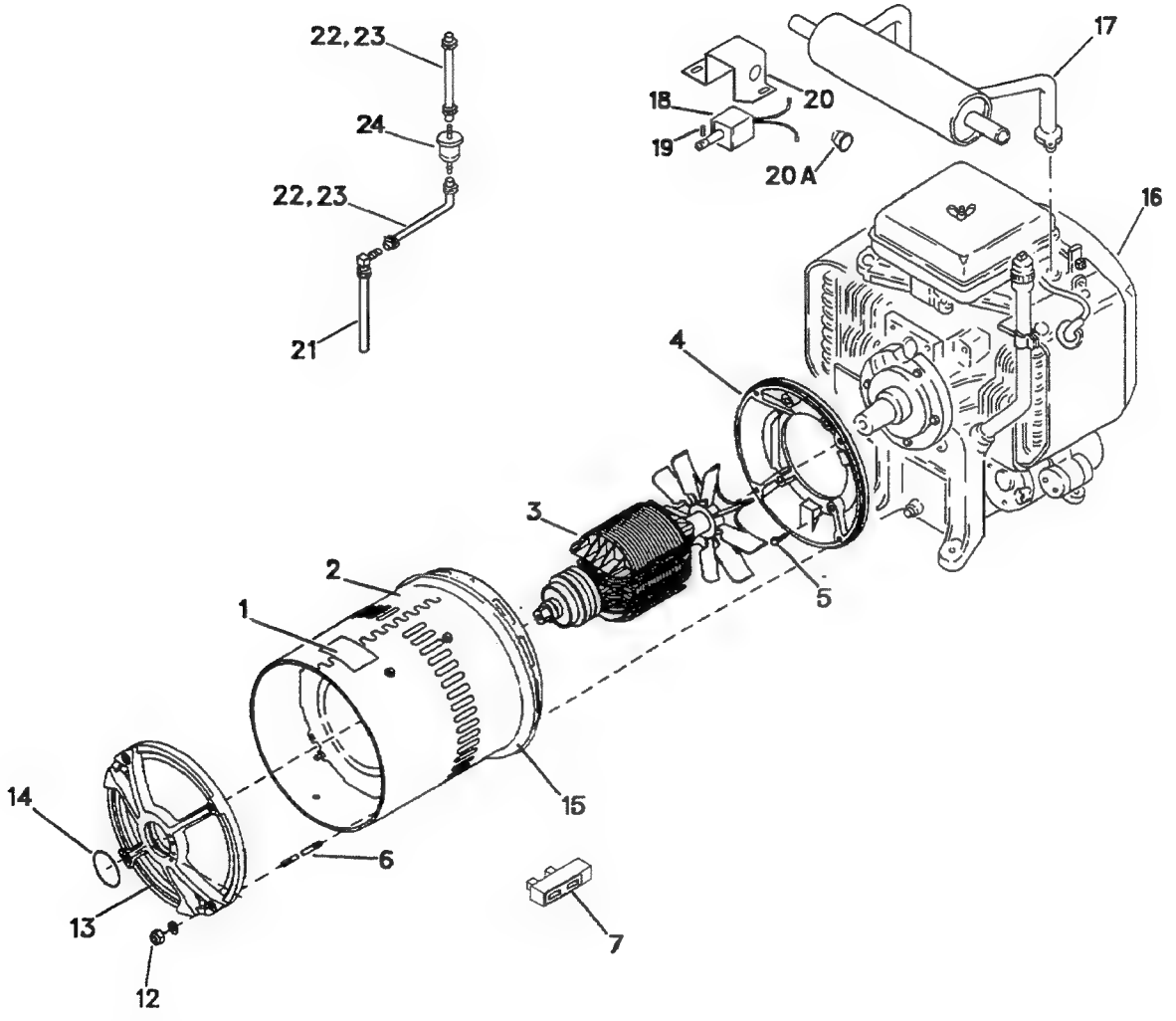


Figure 8-3 Generator Group

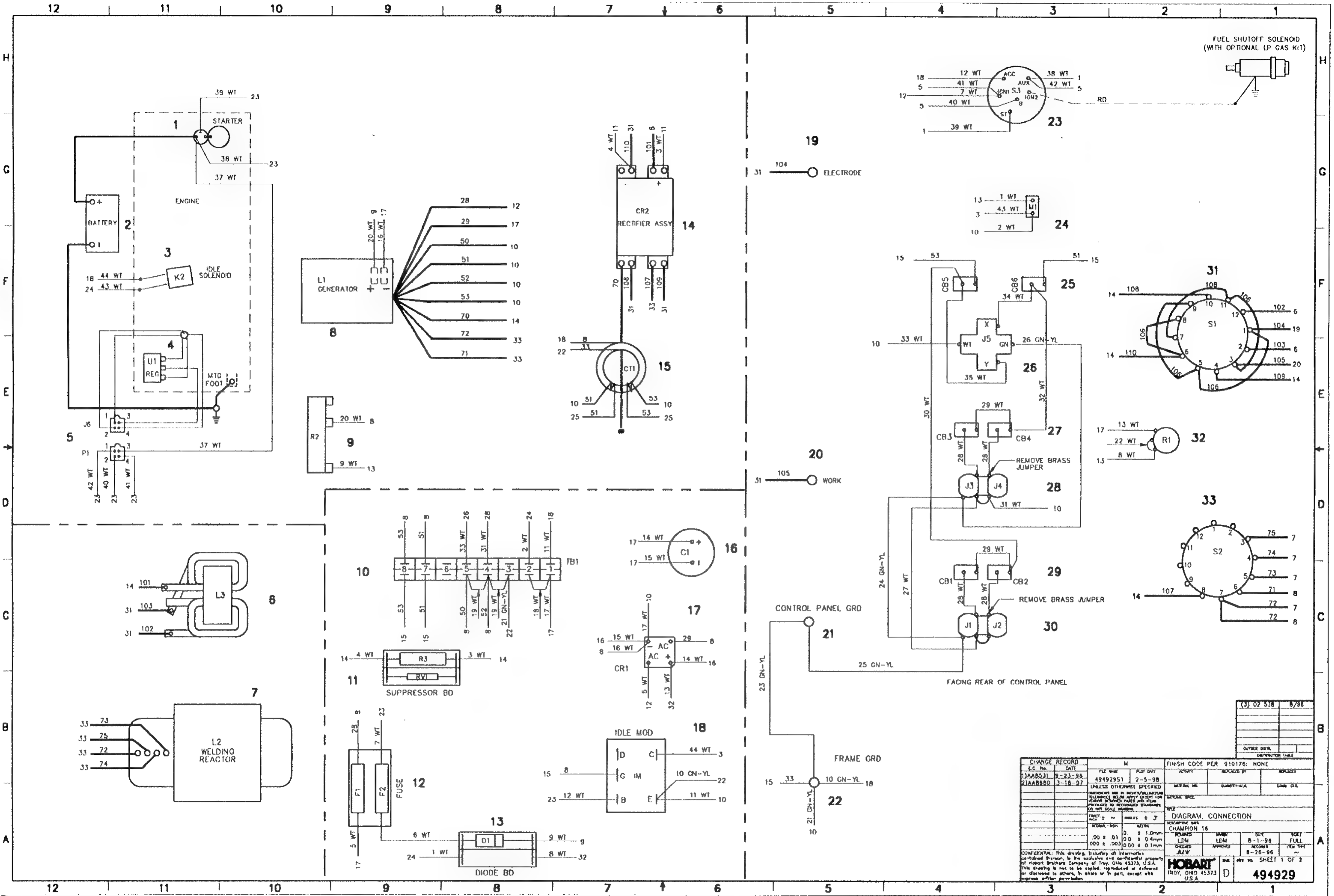
Item No.	Part No.	Description	Quantity
		Figure 8-3 Generator Group	
1	406001	LABEL, moving parts	1
2	494878	GENERATOR, with stator assembly	1
3	495072	ARMATURE, assembly	1
4	160567	ADAPTER, engine	1
5	W-11097-7	SCREW, 3/8-16 x 2 HHC ST	4
6	494882	STUD, 3/8-16 generator	4
7	180556	BRUSHHOLDER, assembly	1
12	50MS-732-2	NUT, 3/8-16 HEX KEPS ST	4
13	183336	ENDBELL	1
14	183419	O-RING	1
15	494012	GROMMET, generator	1
16	Ref.	ENGINE, Onan Mdl p216 16HP; Gas Onan #P216 G-1/11000B	Ref.
17	494797	MUFFLER, dual outlet to engine	1
18	165810	SOLENOID, idle K2	1
19	059926	PIN, spring	1
20	494778	BRACKET, mounting	1
20A	057084	BUSHING, open/closed	1
21	494001	TUBE, fuel assembly	1
22	Ref.	HOSE, fuel line rubber 1/4 ID	2
23	408975-1	CLAMP, hose	4
24	Ref.	FILTER, fuel (22 Micron) Onan P.N. 149-2206-01 or equivalent	1
	Ref.	FILTER, oil engine Onan #122-0645	Ref.

This page intentionally left blank.

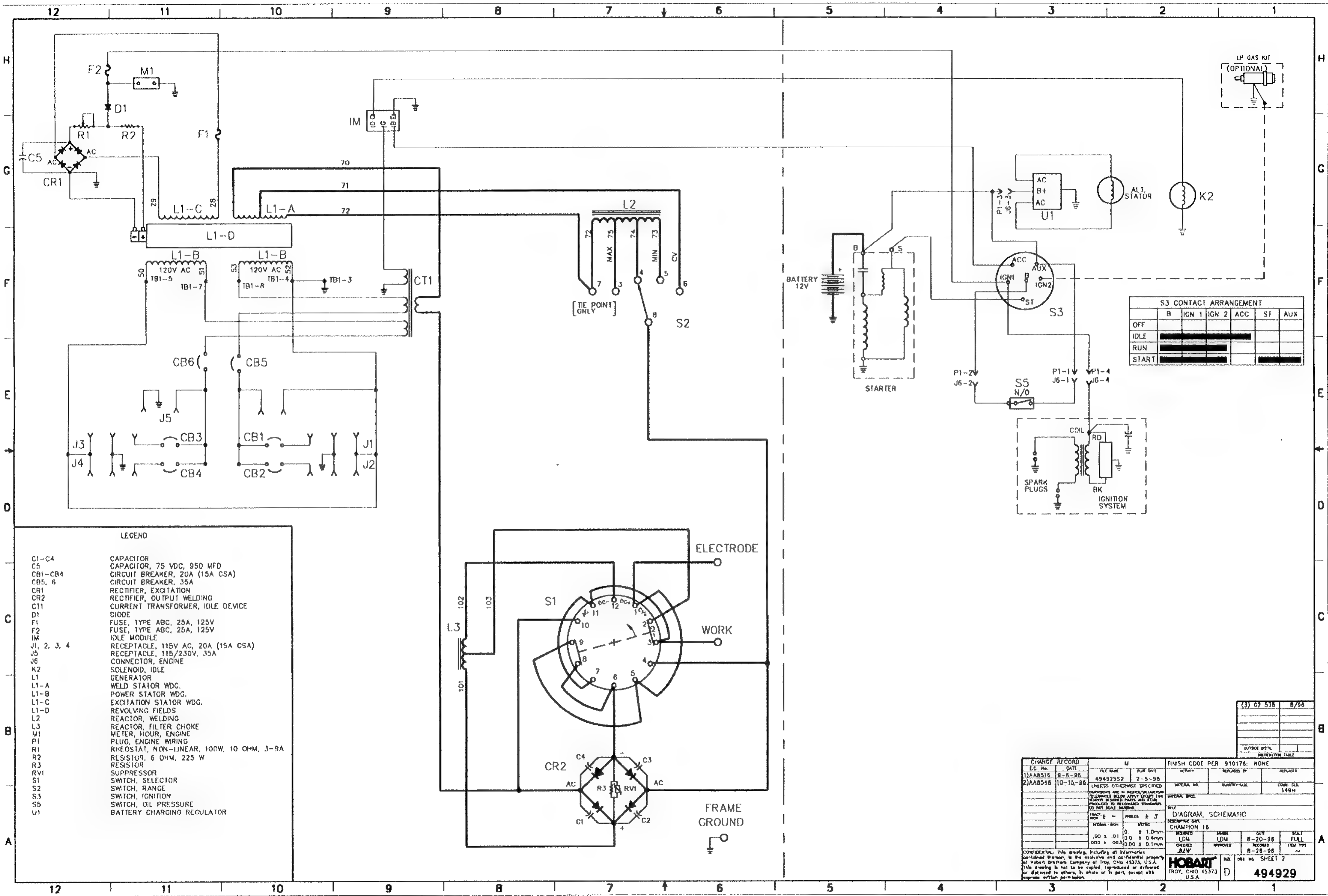
DIAGRAMS

- Note the model and specification number shown on the equipment nameplate.
- Locate these numbers in the model and specification number columns below.
- Use only those diagrams and instructions that are applicable.

MODEL NUMBER	SPECIFICATION NUMBER	CONNECTION DIAGRAM	SCHEMATIC DIAGRAM
CHAMPION 16	ALL SPECS	494929 Sheet 1	494929 Sheet 2



FUEL SHUTOFF SOLENOID (WITH OPTIONAL LP GAS KIT)
STARTER
ENGINE
BATTERY
IDLE SOLENOID
MTG FOOT
L1 GENERATOR
CR2 RECTIFIER ASSY
ELECTRODE
WORK
REMOVE BRASS JUMPER
CONTROL PANEL GRD
FRAME GRD
FACING REAR OF CONTROL PANEL
L3
L2 WELDING REACTOR
SUPPRESSOR BD
FUSE
DIODE BD
IDLE MOD
CR1
TB1
DIAGRAM, CONNECTION
CHAMPION 16
HOBART TROY, OHIO 45373 U.S.A.
SHEET 1 OF 2
494929


LEGEND
C1–C4 CAPACITOR
C5 CAPACITOR, 75 VDC, 950 MFD
CB1–CB4 CIRCUIT BREAKER, 20A (15A CSA)
CB5, 6 CIRCUIT BREAKER, 35A
CR1 RECTIFIER, EXCITATION
CR2 RECTIFIER, OUTPUT WELDING
CT1 CURRENT TRANSFORMER, IDLE DEVICE
D1 DIODE
F1 FUSE, TYPE ABC, 25A, 125V
F2 FUSE, TYPE ABC, 25A, 125V
IM IDLE MODULE
J1, 2, 3, 4 RECEPTACLE, 115V AC, 20A (15A CSA)
J5 RECEPTACLE, 115/230V, 35A
J6 CONNECTOR, ENGINE
K2 SOLENOID, IDLE
L1 GENERATOR
L1–A WELD STATOR WDG.
L1–B POWER STATOR WDG.
L1–C EXCITATION STATOR WDG.
L1–D REVOLVING FIELDS
L2 REACTOR, WELDING
L3 REACTOR, FILTER CHOKE
M1 METER, HOUR, ENGINE
P1 PLUG, ENGINE WIRING
R1 RHEOSTAT, NON-LINEAR, 100W, 10 OHM, 3–9A
R2 RESISTOR, 6 OHM, 225 W
R3 RESISTOR
RV1 SUPPRESSOR
S1 SWITCH, SELECTOR
S2 SWITCH, RANGE
S3 SWITCH, IGNITION
S5 SWITCH, OIL PRESSURE
U1 BATTERY CHARGING REGULATOR
S3 CONTACT ARRANGEMENT
B IGN 1 IGN 2 ACC ST AUX
OFF
IDLE
RUN
START
ELECTRODE
WORK
FRAME GROUND
BATTERY 12V
STARTER
IGNITION SYSTEM
SPARK PLUGS
COIL
LP GAS KIT (OPTIONAL)
ALT. STATOR
TIE POINT ONLY
120V AC
CHANGE RECORD
E.C. No. DATE
1) AA8518 9-8-98
2) AA8548 10-15-98
FILE NAME 49492952
PLOT DATE 2-5-98
UNLESS OTHERWISE SPECIFIED
FINISH CODE PER 910176: NONE
149H
DIAGRAM, SCHEMATIC
CHAMPION 16
LDM LDM 8-20-98 FULL
AJW 8-28-98
HOBART TROY, OHIO 45373 U.S.A.
D
SHEET 2
494929
(3) 02 538 8/98
CONFIDENTIAL: This drawing, including all information contained thereon, is the exclusive and confidential property of Hobart Brothers Company of Troy, Ohio 45373, U.S.A. This drawing is not to be copied, reproduced or delivered or disclosed to others, in whole or in part, except with express written permission.

EAST PENN manufacturing co., inc.

LEAD RETURN RECYCLE

- Material Safety Data Sheet -
BATTERY ELECTRIC STORAGE, DRY

SECTION I

Manufacturer's Name:
East Penn Manufacturing Co. Inc.
Deka Road, Lyon Station, PA 19536

Date Prepared: Revised April 1994

Telephone Number for Information: (610) 682-6361

Emergency Telephone Number: **CHEMTREC:** 1-800-424-9300,
In Washington D.C. or outside continental U.S., call 1-202-483-7616

SECTION II
HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

Hazardous Components Specific Chemical Identity (Common Name(s)	OSHA PEL	ACGIH TLV	Other Limits Recommended	Percent
Lead and Lead Components	0.050 mg/m^3	0.15 mg/m^3	N/A	97

SECTION III
PHYSICAL/CHEMICAL CHARACTERISTICS

Appearance and Odor: N/A

Solubility in Water: N/A

Boiling Point: N/A

Specific Gravity (H_2O=1): N/A

Evaporation Rate (Butyl Acetate=1): N/A

Vapor Density (AIR=1): N/A

Melting Point: N/A

Vapor Pressure (mm Hg.): N/A

SECTION IV
FIRE AND EXPLOSION HAZARD DATA

Flash Point (Method Used): N/A **Flammable Limits:** N/A **LEL:** N/A **UEL:** N/A

Extinguishing Media: Dry chemical, carbon dioxide, water spray or foam

Special Fire Fighting Procedures: N/A **Unusual Fire and Explosion Hazards:** N/A

SECTION V
REACTIVITY DATA (Battery Case)

Stability: Stable **Conditions to Avoid:** N/A **Incompatibility (Material to Avoid):** N/A

Hazardous Decomposition of By-Products: N/A **Hazardous Polymerization:** will not occur

SECTION VI
HEALTH HAZARD DATA

Route(s) of Entry: No applicable under normal use

Health Hazards (acute and chronic): Internal components contain lead. Repeated or prolonged exposure to lead can result in lead poisoning. Lead accumulates in the bone and body organs and is eliminated from the body slowly. (Ref: 29 CFR 1910.1025)

Carcinogenicity: N/A
IARC Monographs: Group 2B carcinogen
OSHA Regulated: 29CFR1910.1025

Medical Conditions Generally Aggravated by Exposure: Pregnant women and children must be protected from lead exposure.

Signs and Symptoms of Exposure:
Short term: Skin and eye irritation, headache, nausea, vomiting, abdominal spasms, fatigue, weight loss, anemia, pain in legs, arms, and joints.

Long term: CNS damage, kidney disfunctions and potential reproductive hazard. Symptoms of lead exposure can be confirmed by the presence of elevated levels of lead in blood.

Emergency and First Aid Procedures: Not applicable under normal use. If lead exposure is suspected, seek medical attention.

SECTION VII
PRECAUTIONS FOR SAFE HANDLING AND USE - Not Applicable

Steps to be Taken in Case Material is Released or Spilled: Avoid contact with internal components. (See Section VI Health Hazards: Lead)

Waste Disposal Method: Lead acid batteries are completely recycable. For information on returning batteries to East Penn for recycle, call (610) 682-6361.

Precautions to be Taken in Handling and Storing: N/A **Other Precautions:** N/A

SECTION VIII
CONTROL MEASURES - not applicable under normal use

Respiratory Protection (Specific Type): For specific information see 29CFR 1910.1025, Lead Exposure

Ventilation: Local exhaust:
Mechanical (general):
Special:
Other:

Protective Gloves: N/A

Eye Protection: N/A

Other Protective Clothing or Equipment: N/A

Work/Hygienic Practices: Always practice good personal hygiene habits and safe work practices.

TRANSPORTATION
NOTE:

Shipping Name: Battery, dry

Identification Number: N/A, non-assigned

Hazard Class: N/A. This article is not applicable to 49CFR 172.101 Hazardous Materials and not subject to Parts 170-189 of this sub chapter.

U.S. Postal Service Regulations: unrestricted

EAST PENN manufacturing co., inc.

LEAD RETURN RECYCLE

- Material Safety Data Sheet -
BATTERY WET, FILLED WITH ACID
8 UN2794 PGIII

SECTION I

Manufacturer's Name:
East Penn Manufacturing Co. Inc.
Deka Road, Lyon Station, PA 19536

Date Prepared: Revised April 1994

Telephone Number for Information: (610) 682-6361

Emergency Telephone Number: **CHEMTREC:** 1-800-424-9300,
In Washington D.C. or outside continental U.S., call 1-202-483-7616

SECTION II

HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

Hazardous Components Specific Chemical Identity (Common Name(s)	OSHA PEL	ACGIH TLV	Other Limits Recommended	Percent
Lead, CAS #7439921	0.05 mg/m³	0.15 mg/m³	N/A	43-70
Sulfuric Acid, CAS #7664939	1.00 mg/m³	1.00 mg/m³	N/A	20-44
Antimony, CAS #7440360	0.50 mg/m³	0.50 mg/m³	N/A	0-4

SECTION III

PHYSICAL/CHEMICAL CHARACTERISTICS (Sulfuric Acid)

Appearance and Odor: clear, odorless, colorless
Boiling Point: approximately 235°F
Evaporation Rate (Butyl Acetate=1): less than 1.0
Melting Point: N/A
Solubility in Water: completely
Specific Gravity (H_2O=1): 1.220-1.325
Vapor Density (AIR=1): N/A
Vapor Pressure (mm Hg.): 13

SECTION IV

FIRE AND EXPLOSION HAZARD DATA

Flash Point (Method Used): non-flammable
Extinguishing Media: Class ABC extinguisher, CO_2 and/or Halon
Flammable Limits: *hydrogen gas LEL: 4% UEL: 74%

Special Fire Fighting Procedures: Cool exterior of battery if exposed to fire to prevent rupture. The acid mist and vapors in a fire situation are corrosive. Wear special respiratory protection (SCBA) and clothing.

Unusual Fire and Explosion Hazards: *Hydrogen gas, which may explode if ignited, is produced by this battery, especially when charging. Use adequate ventilation, avoid open flames, sparks, or other sources of ignition.

SECTION V

REACTIVITY DATA (Battery Case)

Stability: Stable
Condition to Avoid: Cases decompose at 160-410°C (322-770°F)

Incompatibility (Materials to Avoid): Strong oxidizing agents such as hot nitric acid, etc.

Hazardous Decomposition of By-Products: Combustion can produce carbon dioxide (CO^2) and carbon monoxide (CO).

Hazardous Polymerization: will not occur
Conditions to Avoid: not applicable

SECTION VI
HEALTH HAZARD DATA (Sulfuric Acid)

Route(s) of Entry: Inhalation, skin contact, and ingestion

Health Hazards (Acute and Chronic): Short term exposure: Sulfuric acid may cause irritation of eyes, nose, and throat. Prolonged contact may cause severe burns. Long term exposure: Repeated contact causes irritation and skin burns. Repeated exposure to mist may cause errosion of teeth, chronic eye irritation and/or chronic inflammation of the nose, throat, and bronchial tubes.

TARGET ORGAN: respiratory system, eyes, skin, & teeth **Carcinogenicity:** N/A

Signs and Symptoms of Exposure: Acid contact may cause irritation of eyes, nose and throat. Breathing of mist may produce respiratory difficulty. Contact with eyes and skin causes irritation and skin burns. Sulfuric acid is a **CORROSIVE** chemical.

Medical Conditions Generally Aggravated by Exposure: Pulmonary edema, bronchitis, emphysema, dental errosion, and traceobronchitis

Emergency and First Aid Procedures:

1) Flush contacted area with large amounts of water for at least 15 minutes. Remove contaminated clothing and obtain medical attention.

2) If swallowed, give large volumes of water. **DO NOT** induce vomiting, obtain medical treatment.

3) Eyewash and shower stations should be made available.

SECTION VII
PRECAUTIONS FOR SAFE HANDLING AND USE

Steps to be Taken in Case Material is Released or Spilled: SULFURIC ACID: Dilute spill cautiously with five to six volumes of water and gradually neutralize with sodium bicarbonate, soda ash or lime. When exposure level is not known, wear NIOSH approved positive pressure self-contained breathing apparatus. (Reference DOT UN2796)

Waste Disposal Method: Lead-acid batteries are completely recyclable. For information on returning batteries to East Penn for recycling, call (610) 682-6361.

Precautions to be Taken in Handling and Storing: Store away from reactive material as defined in Section V, Reactivity Data.

Other Precautions: Sodium bicarbonate, soda ash, sand, or lime should be kept in same general area for emergency use. See Section IV on generation of hydrogen gas. If battery case is broken, avoid direct contact with internal components.

SECTION VIII
CONTROL MEASURES

Respiratory Protection (Specific Type): Acid gas respirator required when PEL is exceeded or employee witnesses respiratory irritation. (See Section VI, Health Hazard Data).

Ventilation: Must be provided when charging in an enclosed area. 29CFR1910.178(g) and .305(j)(7)

Mechanical (general): acceptable at 1 to 4 air exchanges/hour or to maintain air concentrations below the PEL.
Local exhaust: preferred
Special:
Other: local building/fire codes may require explosion proof fans and equipment

Protective Gloves: acid resistant (for example, rubber)
Eye Protection: preferred
Other Protective Clothing or Equipment: acid resistant aprons, boots, and protective clothing

Work/Hygienic Practices: Good personal hygiene and work practices are mandatory.

EAST PENN manufacturing co., inc.

LEAD RETURN RECYCLE

- Material Safety Data Sheet -
BATTERY FLUID ACID
8 UN2796 PGII

SECTION I

Manufacturer's Name:
East Penn Manufacturing Co. Inc.
Deka Road, Lyon Station, PA 19536

Date Prepared: Revised April 1994

Telephone Number for Information: (610) 682-6361

Emergency Telephone Number: **CHEMTREC:** 1-800-424-9300,
In Washington D.C. or outside continental U.S., call 1-202-483-7616

SECTION II

HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

Hazardous Components Specific Chemical Identity (Common Name(s)	OSHA PEL	ACGIH TLV	Other Limits Recommended	Percent
Sulfuric Acid, CAS #7664939	1.00 mg/m^3	1.00 mg/m^3	N/A	30

SECTION III

PHYSICAL/CHEMICAL CHARACTERISTICS (Sulfuric Acid)

Appearance and Odor: clear, odorless, colorless
Boiling Point: approximately 235°F
Evaporation Rate (Butyl Acetate=1): less than 1.0
Melting Point: N/A
Solubility in Water: completely
Specific Gravity (H_2O=1): 1.220-1.325
Vapor Density (AIR=1): N/A
Vapor Pressure (mm Hg.): 13

SECTION IV

FIRE AND EXPLOSION HAZARD DATA

Flash Point (Method Used): non-flammable
Extinguishing Media: N/A
Flammable Limits: N/A
LEL: **UEL:**

Special Fire Fighting Procedures: Sulfuric acid will not burn but is capable of igniting finely combustible material on contact. Combustibles may be smothered by dry chemical extinguishing media.

Unusual Fire and Explosion Hazards: NFPA ratings: H=3, F=0, R=2

SECTION V

REACTIVITY DATA (Battery Case)

Stability: Stable
Condition to Avoid: Contact with metal may release explosive hydrogen gas.

Incompatibility (Materials to Avoid): Strong alkali materials, carbides, chlorates, nitrates, and pierates, organic acid, acetates, anhydrites.

Hazardous Decomposition of By-Products: Thermal decomposition or combustion may produce a sulfur trioxide and/or sulfur dioxide.

Hazardous Polymerization: will not occur

SECTION VI
HEALTH HAZARD DATA (Sulfuric Acid)

Route(s) of Entry: Inhalation, skin contact, and ingestion **Carcinogenicity:** N/A

Signs and Symptoms of Exposure: Acid contact may cause irritation of eyes, nose and throat. Breathing of mist may produce respiratory difficulty. Contact with eyes and skin causes irritation and skin burns. Sulfuric acid is a **CORROSIVE** chemical.

Medical Conditions Generally Aggravated by Exposure: Pulmonary edema, bronchitis, emphysema, dental errosion, and traceobronchitis

Health Hazards (Acute and Chronic):
Short term exposure: Sulfuric acid may cause irritation of eyes, nose, and throat. Prolonged contact may cause severe burns.

Long term exposure: Repeated contact causes irritation and skin burns. Repeated exposure to mist may cause errosion of teeth, chronic eye irritation and/or chronic inflammation of the nose, throat, and bronchial tubes.

TARGET ORGAN: respiratory system, eyes, skin, & teeth

Emergency and First Aid Procedures:

1) Flush contacted area with large amounts of water for at least 15 minutes. Remove contaminated clothing and obtain medical attention.

2) If swallowed, give large volumes of water. **DO NOT** induce vomiting, obtain medical treatment.

3) Eyewash and shower stations should be made available.

SECTION VII
PRECAUTIONS FOR SAFE HANDLING AND USE

Steps to be Taken in Case Material is Released or Spilled: Dilute spill cautiously with five to six volumes of water and gradually neutralize with sodium bicarbonate, soda ash, or lime. When exposure level is not known, wear NIOSH approved positive pressure self-contained breathing apparatus. (Reference DOT UN2796)

Waste Disposal Method: Neutralize and dispose in accordance with local, state, and federal regulations.

Precautions to be Taken in Handling and Storing: Store away from reactive material as defined in Section V, Reactivity Data.

Other Precautions: Sodium bicarbonate, soda ash, sand, or lime should be kept in same general area for emergency use.

SECTION VIII
CONTROL MEASURES

Respiratory Protection (Specific Type): Acid gas respirator required when PEL is exceeded or employee witnesses respiratory irritation. (See Section VI, Health Hazard Data).

Ventilation: When PEL is exceeded.
Mechanical (general):
Local exhaust: preferred
Special:
Other: Adequate ventilation to maintain exposure concentrations below the PEL.

Protective Gloves: acid resistant (for example, rubber)
Eye Protection: Mandatory during handling and transfer of acid (recommend chemical goggles).
Other Protective Clothing or Equipment: acid resistant aprons, boots, protective clothing, and face shield
Protective Gloves: acid resistant (for example, rubber)
Work/Hygienic Practices: Good personal hygiene and work practices are mandatory.

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 12 TROY, OHIO

POSTAGE WILL BE PAID BY ADDRESSEE

ITW Welding Products
National Service Dept.
600 West Main Street
Troy, Ohio 45373-9933

IMPORTANT!!!

PLEASE COMPLETE THE ATTACHED REGISTRATION CARD AND RETURN TO ITW WELDING PRODUCTS GROUP TO

ESTABLISH WARRANTY COVERAGE

AND RECEIVE A FREE PACKAGE OF HOBART® BRAND FILLER METAL. PLEASE COMPLETE ALL INFORMATION.

REGISTRATION CARD

PLEASE SEND ME (CHECK ONE):

___ 1 LB. SPOOL OF .030 Dia. FLUX CORED (SELF-SHIELDED) WIRE

___ 5 LB. BOX OF 1/8" 418C (7018) ELECTRODES

PRODUCT: _____ PART NO.: _____

SERIAL #: _____ DATE PURCHASED: _____

YOUR NAME: _____

COMPANY NAME: _____

ADDRESS: _____

CITY: _____ STATE: _____ ZIP: _____

PRIMARY BUSINESS: _____

DEPT. WHERE USED: _____

PRODUCT RECEIVED IN GOOD CONDITION: ___YES ___NO

IF NO, WHAT WAS PROBLEM? _____

PURCHASED FROM (Distributor Name): _____

CITY: _____ STATE: _____ ZIP: _____

HOBART®

HOBART®

"POWER PROTECTION" 3 YEAR WARRANTY

1. **General:** Hobart's products are warranted for three (3) years following date of shipment to the original user with the exceptions of items listed in paragraphs 2 through 8.

2. **Parts and Labor For:** Motor driven guns; High frequency/Capacitor Discharge units; Running gears/Trailers; Field options, are warranted for one (1) year.

3. **Expendable Items:** Primary and secondary switch contacts, cable connectors, carbon brushes, fuses, bulbs, filters, nozzles, contact tips, liners, cutting tips and wire feed rolls are worn or consumed in the normal process of welding or cutting and are therefore warranted only if found to be defective prior to use.

4. **Replacement parts:** Replacement and exchange parts are warranted for the remainder of the original equipment warranty or for a period of ninety (90) days, whichever is greater.

5. **Semiautomatic Items:** Mig welding guns and cables and plasma cutting torches, tig torches and cables and remote controls and accessory kits are warranted for ninety (90) days.

6. **Engines, Tires, and Batteries:** Hobart does not warrant items furnished by Hobart but manufactured by others, including without limitation, gasoline or diesel engines, engine electrical equipment, batteries, and tires. Such items are warranted directly by the manufacturer, and Hobart may periodically inform customers of such warranty coverage; however, Hobart does not guarantee the accuracy or completeness of its information regarding such warranties.

7. **Exclusive Remedies:** In case of Hobart's breach of warranty or any other duty with respect to the quality of any product or service, the sole and exclusive remedies therefore shall be:

> As to **PRODUCTS**, (1) repair, (2) replacement, or (3) where authorized by Hobart, payment of or credit for the purchase price (less reasonable depreciation based on its actual use) upon return of the product, and as to **SERVICES** (including repair under warranty), the sole and exclusive remedies therefore shall be payment or credit for Hobart's actual charge therefore or, in the absence of any actual charge, the customary or reasonable charge for such services, and if such breach also involves impairment of Hobart products, the remedies available for breach of warranty with respect to the product.

8. **Modification and Misuse:** This warranty does not apply to products which have been modified in any way by any party other than Hobart; nor to products which have not been installed and operated in accordance with applicable industry standards; nor to products which have been used other than under the usual conditions for which designed; nor to products that have not received proper care, lubrication, protection, and maintenance under supervision of competent personnel. Use of a product after discovery of a defect voids all warranties.

DISCLAIMER OF WARRANTIES

THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF, EXCEPT AS SPECIFICALLY PROVIDED IN THE EXPRESSED WARRANTIES SET FORTH ABOVE, ALL PRODUCTS ARE SOLD "AS IS". HOBART MAKES NO WARRANTIES, EXPRESSED OR IMPLIED, OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

WARNING

At all times, safety is an important consideration in the installation, servicing, and operation of the product, and skilled, qualified technical assistance should be utilized at all times. Specific recommendations are included in "Safety in Welding and Cutting", American National Standard No. Z-49-1.

Hobart Brothers Company
Troy, Ohio 45373 U.S.A.

April 1997
910516